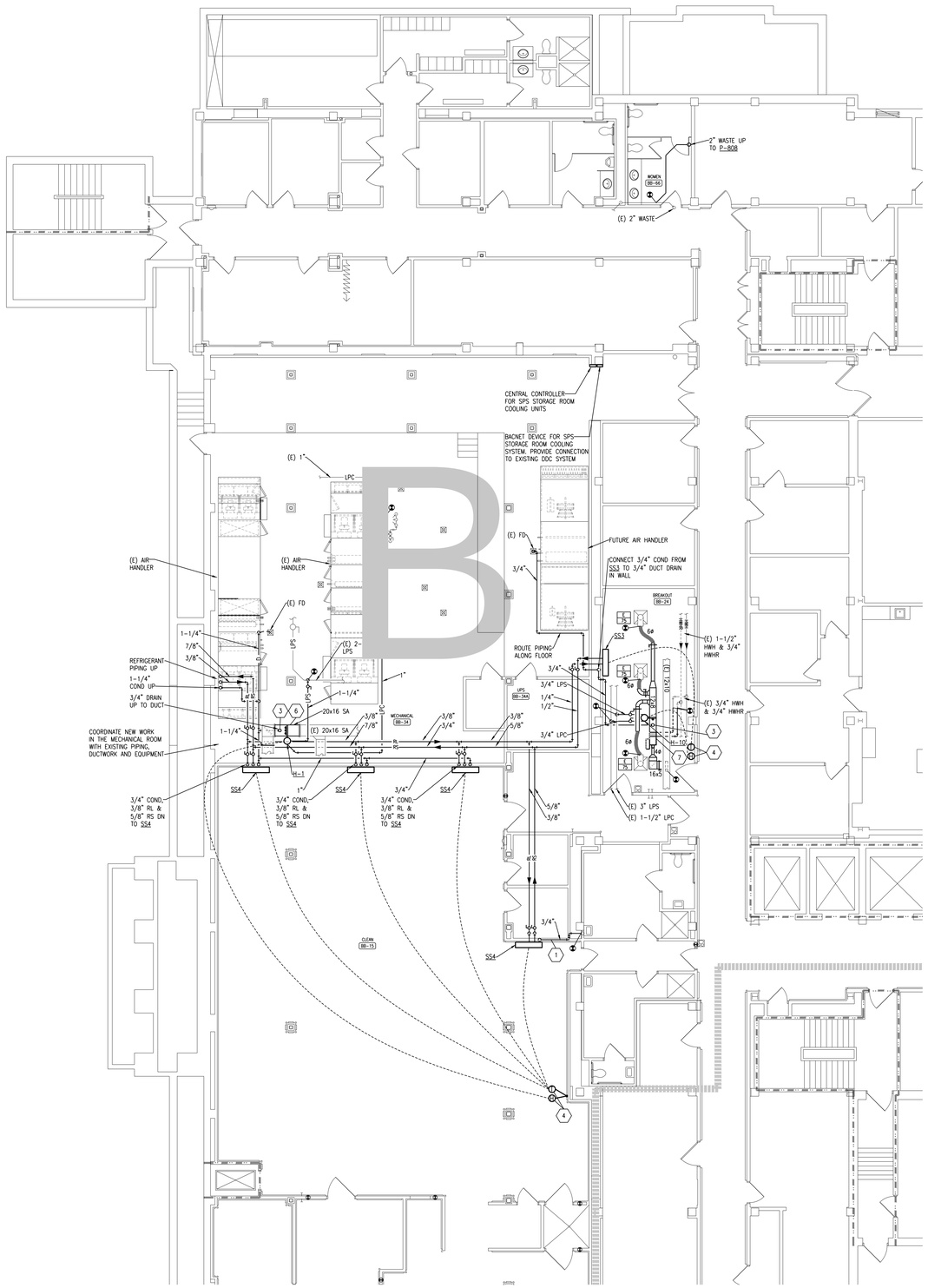
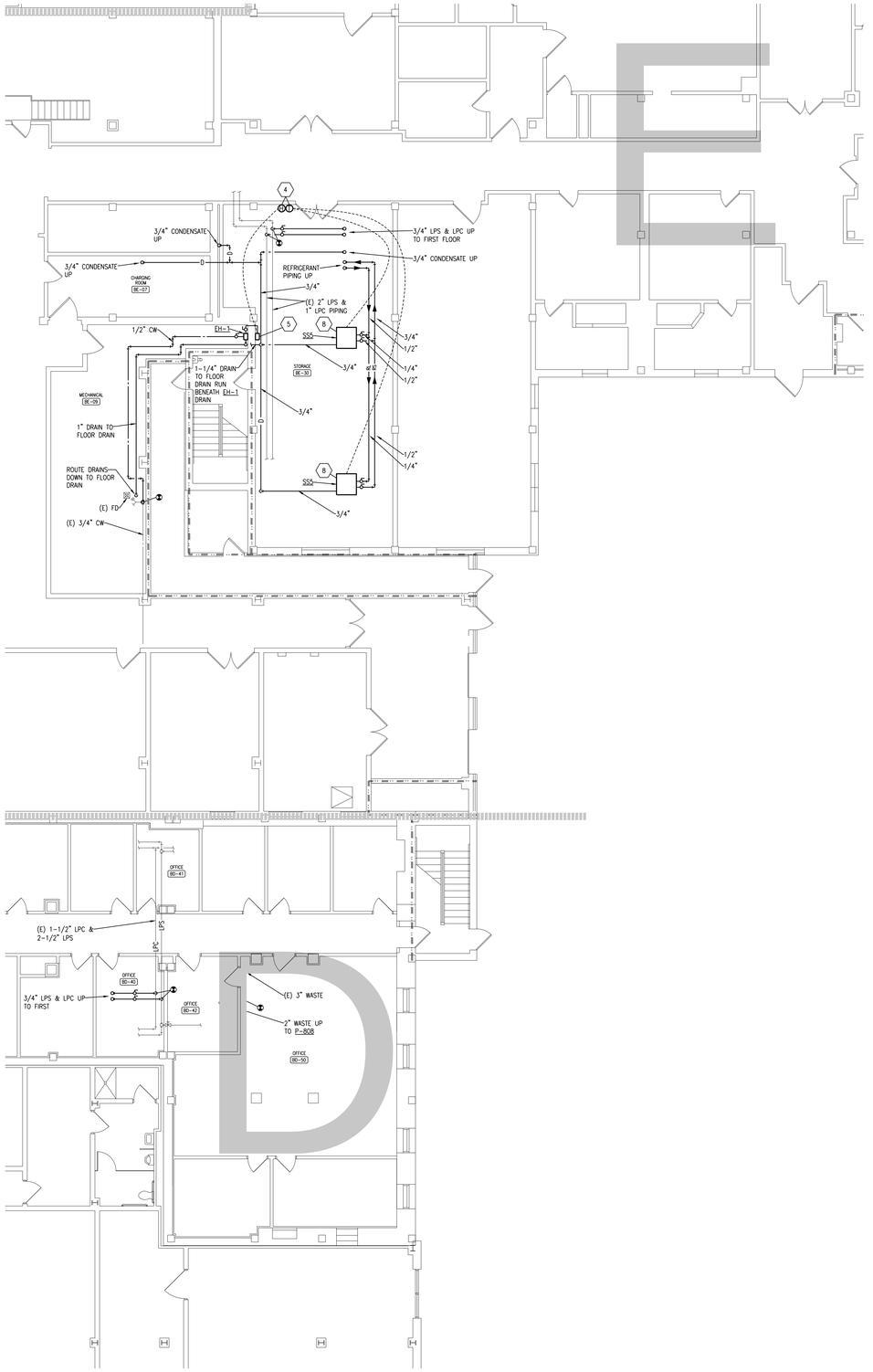


HEATING PLAN - 'B' WING
1/8"=1'-0"



HEATING PLAN - 'D'AND 'E' WINGS
1/8"=1'-0"

HVAC PIPING NOTES:

A. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

B. COORDINATE ALL HVAC PIPING INSTALLATION WITH GENERAL, PLUMBING, FIRE PROTECTION, VENTILATION, AND ELECTRICAL CONTRACTORS. INSTALL ALL HVAC PIPING AS HIGH AS POSSIBLE. PROVIDE ALL NECESSARY OFFSETS (DROPS AND RISES) TO KEEP HVAC PIPING TIGHT TO THE STRUCTURE OR DUCTWORK ABOVE. OFFSET HVAC PIPING TO AVOID BEAMS AND INSTALLATION BY ALL TRADES.

C. REFER TO AND COORDINATE WITH THE ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, AND SOFFIT AREAS FOR INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC.

D. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

E. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS AND/OR CEILINGS TO INSTALL NEW HVAC PIPING, EQUIPMENT, ETC. AS REQUIRED. PATCH WALLS AND/OR CEILINGS TO MATCH EXISTING.

F. MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL, CONTROL, AND ACCESS PANELS FOR ACCESSIBILITY.

G. ALL SHUT-OFF VALVES, CONTROL VALVES, STRAINERS, ETC., SHALL BE INSTALLED IN ACCESSIBLE CEILINGS. VALVES SHALL BE LOCATED NOT MORE THAN 2 FEET ABOVE ACOUSTICAL CEILINGS.

H. SHUT-OFF VALVES FOR ALL TERMINAL DEVICES SHALL BE AS ACCESSIBLE AS POSSIBLE TO THE CONTROLLED DEVICE.

I. PROVIDE 1/2" DRAIN VALVE AT ALL LOW POINTS OF EACH SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE 1/2" VENT VALVES AT ALL HIGH POINTS OF EACH SYSTEM TO ENABLE COMPLETE VENTING.

J. INSTALL WALL MOUNTED UNITS AS CLOSE TO THE CEILING AS POSSIBLE. REFER TO MANUFACTURES RECOMMENDATIONS FOR CLEARANCES REQUIRED.

K. PATCH FIREPROOFING AT STRUCTURAL STEEL AND DECK THAT IS DISTURBED DURING CONSTRUCTION. FIRE CAULK ALL PENETRATIONS.

L. DISCONNECT AND RECONNECT ALL DIFFUSERS, GRILLES, AND SPRINKLER HEADS IN CEILINGS INDICATED TO BE TAKEN DOWN AS A RESULT OF WORK ON THIS PROJECT. SEE ARCHITECTURAL SHEETS FOR CEILING REMOVAL AREAS.

1. ROUTE 3/4" CONDENSATE TO SINK DRAIN/DRAIN BOX.
2. ROUTE 1" HUMIDIFIER DRAIN TO SINK DRAIN/DRAIN BOX. PROVIDE REMOVABLE COVERS FOR DRAIN BOX.
3. 3/4" DUCT DRAIN FROM DRAIN PAN.
4. LABEL THERMOSTAT AND HUMIDISTATS ACCORDING TO WHAT UNITS THEY SERVE.
5. ROUTE 1" STEAM LINE FROM HUMIDIFIER TO REMOTE BLOWER PACK MOUNTED IN ROOM. COORDINATE BLOWER PACK LOCATION WITH OWNER EQUIPMENT SO THAT ROOM DISCHARGE IS NOT BLOCKED.
6. DEMOLISH EXISTING SUPPLY DUCTWORK, HANGERS, INSULATION AND REPLACE WITH NEW DUCTS AS SHOWN IN PREPARATION FOR HUMIDIFIER INSTALLATION.
7. RELOCATE EXISTING VAV BOX ALONG WITH ALL ASSOCIATED PIPING, CONTROLS, INSULATION, HANGERS, ETC. DEMOLISH EXISTING DUCTWORK AND PROVIDE NEW DUCT LAYOUT AS SHOWN ON PLAN. VERIFY EXISTING BOX SIZE BEFORE RELOCATION IN ORDER TO COORDINATE WITH A SEPARATE PROJECT FOR THIS SPACE. PROVIDE NECESSARY DUCT CONNECTIONS AS REQUIRED BY LARGER BOX SIZE. PROVIDE 3/4" HWH & 3/4" HWHR PIPING TO RELOCATED VAV BOX.
8. BOTTOM OF UNIT SHALL BE A MINIMUM OF 8 FEET ABOVE FINISHED FLOOR.

PHASING NOTES:

1. ALL WORK IN BASEMENT ROOMS EXCEPT MECHANICAL SPACES SHALL OCCUR DURING OVERTIME AND/OR WEEKEND HOURS. SPACES SHALL BE CLEANED AND RETURNED TO WORKING ORDER PRIOR TO USE BY THE VA STAFF DURING NORMAL BUSINESS HOURS.
2. CAREFULLY COORDINATE WITH THE OWNER A MINIMUM OF 2 WEEKS IN ADVANCE PRIOR TO WORK COMMENCING.
3. REFER TO SHEET X1 GENERAL NOTES AND ARCHITECTURAL SHEETS FOR SPECIFIC PHASING INFORMATION FOR INDIVIDUAL SPACES.

Revisions	Date

Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

ONE BUILDING SYSTEMS CONSULTANTS
Fargo ▪ Grand Forks ▪ Bismarck
Alexandria ▪ 877.380.0509

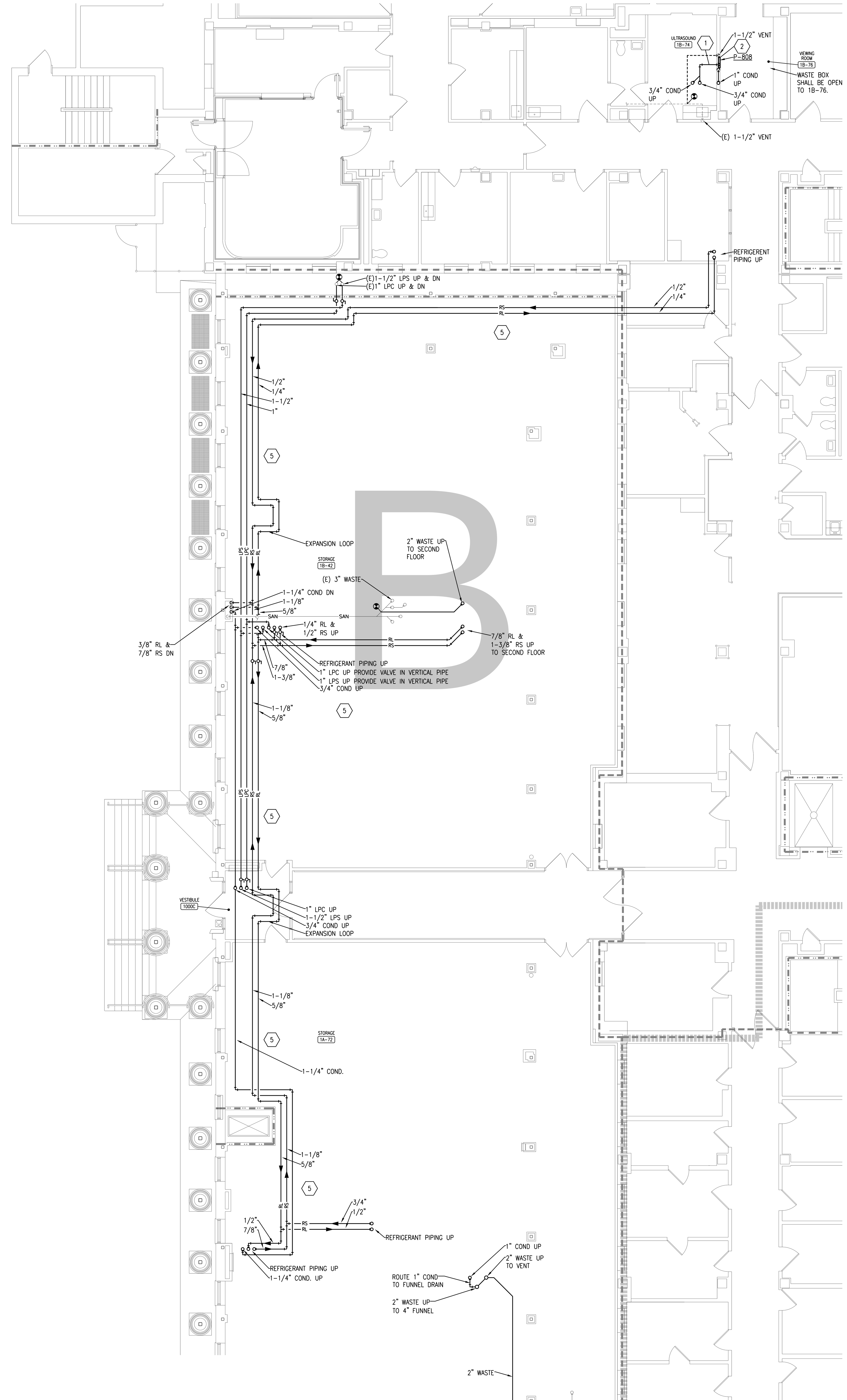
PROFESSIONAL ENGINEER — JOEL C. SPECK — PE - 6847 — DATE 07/05/2013 — NORTH DAKOTA

KEY PLAN

Drawing Title: BASEMENT HEATING PLAN - 'B', 'D', AND 'E' WINGS	Project Title: IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS
VA Project No.: 437-13-103	Contract No.: VA263-P-1217 / VA263-C-
Building No.: 1, 9, 46	AutoCAD File Name: 2012225_MB.1.dwg
Designed By: JP	Checked By: JP
Drawn By: NH	Location: FARGO VA HEALTH CARE SYSTEM FARGO, ND
Date: July 5, 2013	Scale: 1/8" = 1'-0"
Drawing No.: MB.1	Dwg. 8 of 21

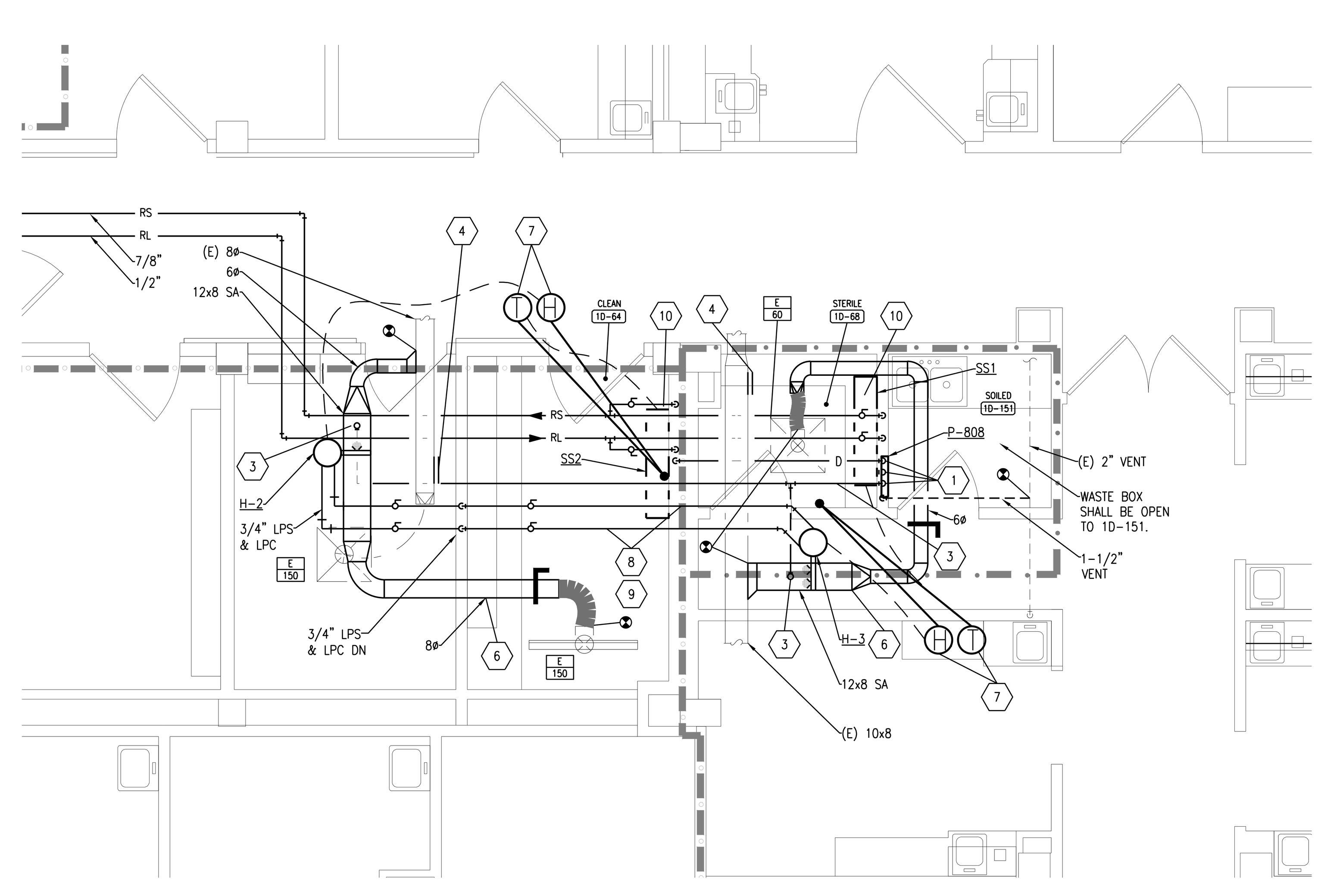
Department of Veterans Affairs

I:\Projects\2012225\DWG\2012225_MB.1.dwg Jul 09, 2013 - 11:37am



HEATING PLAN - 'A' AND 'B' WINGS

1/8'=1'-0'



LARGE SCALE HEATING PLAN - 'D' WING

1/4'=1'-0'

PHASING NOTES:

1. ALL WORK IN FIRST FLOOR ROOMS EXCEPT 1B-42 AND 1A-72 SHALL OCCUR DURING OVERTIME AND/OR WEEKEND HOURS. SPACES SHALL BE CLEANED AND RETURNED TO WORKING ORDER PRIOR TO USE BY THE VA STAFF DURING NORMAL BUSINESS HOURS.
2. CAREFULLY COORDINATE WITH THE OWNER A MINIMUM OF 2 WEEKS IN ADVANCE PRIOR TO WORK COMMENCING.
3. REFER TO SHEET X1 GENERAL NOTES AND ARCHITECTURAL SHEETS FOR SPECIFIC PHASING INFORMATION FOR INDIVIDUAL SPACES.

HVAC PIPING NOTES:

A. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

B. COORDINATE ALL HVAC PIPING INSTALLATION WITH GENERAL, PLUMBING, FIRE PROTECTION, VENTILATION, AND ELECTRICAL CONTRACTORS. INSTALL ALL HVAC PIPING AS HIGH AS POSSIBLE. PROVIDE ALL NECESSARY OFFSETS (DROPS AND RISES) TO KEEP HVAC PIPING TIGHT TO THE STRUCTURE OR DUCTWORK ABOVE. OFFSET HVAC PIPING TO AVOID BEAMS AND INSTALLATION BY ALL TRADES.

C. REFER TO AND COORDINATE WITH THE ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, AND SOFFIT AREAS FOR INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC.

D. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

E. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS AND/OR CEILINGS TO INSTALL NEW HVAC PIPING, EQUIPMENT, ETC. AS REQUIRED. PATCH WALLS AND/OR CEILINGS TO MATCH EXISTING.

F. MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL, CONTROL, AND ACCESS PANELS FOR ACCESSIBILITY.

G. ALL SHUT-OFF VALVES, CONTROL VALVES, STRAINERS, ETC... SHALL BE INSTALLED IN ACCESSIBLE CEILINGS. VALVES SHALL BE LOCATED NOT MORE THAN 2 FEET ABOVE ACOUSTICAL CEILINGS.

H. SHUT-OFF VALVES FOR ALL TERMINAL DEVICES SHALL BE AS ACCESSIBLE AS POSSIBLE TO THE CONTROLLED DEVICE.

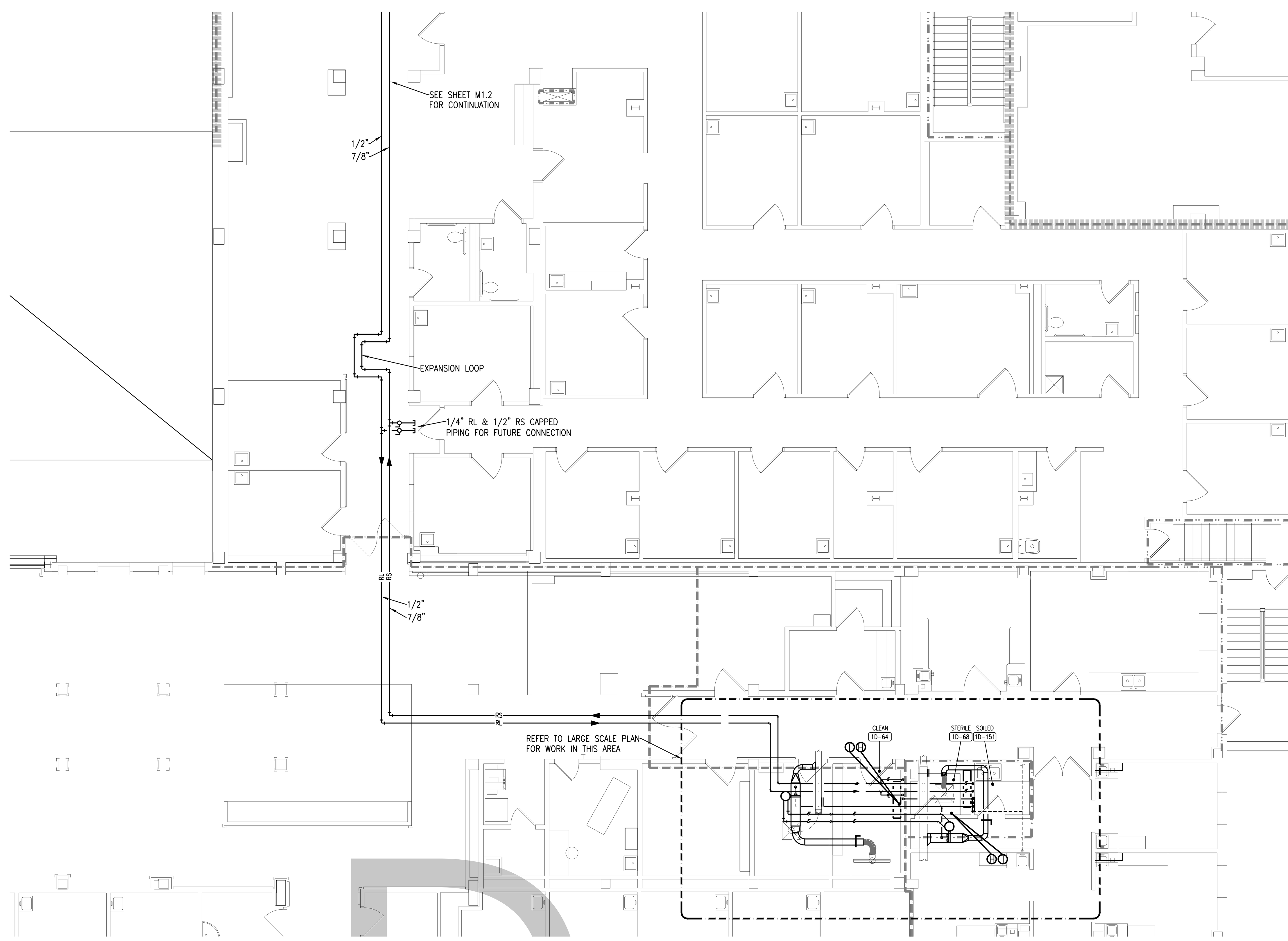
I. PROVIDE 1/2" DRAIN VALVE AT ALL LOW POINTS OF EACH SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE 1/2" VENT VALVES AT ALL HIGH POINTS OF EACH SYSTEM TO ENABLE COMPLETE VENTING.

J. INSTALL WALL MOUNTED UNITS AS CLOSE TO THE CEILING AS POSSIBLE. REFER TO MANUFACTURES RECOMMENDATIONS FOR CLEARANCES REQUIRED.

K. PATCH FIREPROOFING AT STRUCTURAL STEEL AND DECK THAT IS DISTURBED DURING CONSTRUCTION. FIRE CAULK ALL PENETRATIONS.

L. DISCONNECT AND RECONNECT ALL DIFFUSERS, GRILLES, AND SPRINKLER HEADS IN CEILINGS INDICATED TO BE TAKEN DOWN AS A RESULT OF WORK ON THIS PROJECT. SEE ARCHITECTURAL SHEETS FOR CEILING REMOVAL AREAS.

1. ROUTE 3/4" CONDENSATE TO SINK DRAIN/DRAIN BOX.
2. ROUTE 1" HUMIDIFIER DRAIN TO SINK DRAIN/DRAIN BOX. PROVIDE REMOVABLE COVER FOR DRAIN BOX.
3. 3/4" DUCT DRAIN FROM DRAIN PAN.
4. CAP EXISTING DUCT AIR TIGHT AT MAIN.
5. ROUTE ALL PIPING AS TIGHT TO STRUCTURE AS POSSIBLE.
6. DEMOLISH EXISTING SUPPLY DUCTWORK, HANGERS, INSULATION AND REPLACE WITH NEW DUCTS AS SHOWN IN PREPARATION FOR HUMIDIFIER INSTALLATION.
7. LABEL THERMOSTAT AND HUMIDISTAT ACCORDING TO WHAT UNITS THEY SERVE.
8. 3/4" LPS AND LPC TO HUMIDIFIER.
9. BALANCE EXISTING ROOM RETURN GRILLE TO 130 CFM.
10. 1/2" RL & 3/4" RS TO WALL MOUNTED FAN COIL UNIT.



HEATING PLAN - 'D' WING

1/8'=1'-0'

Revisions	Date

Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

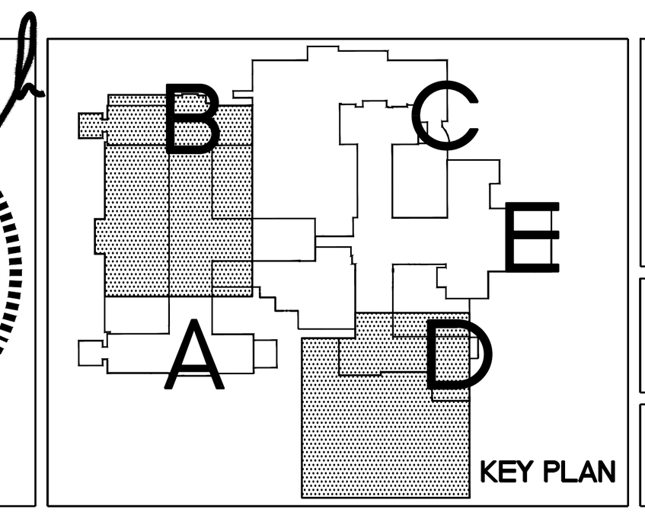
IMAGE GROUP

IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

ONE BUILDING SYSTEMS CONSULTANTS
Fargo ▪ Grand Forks ▪ Bismarck
Alexandria ▪ 877.380.0501

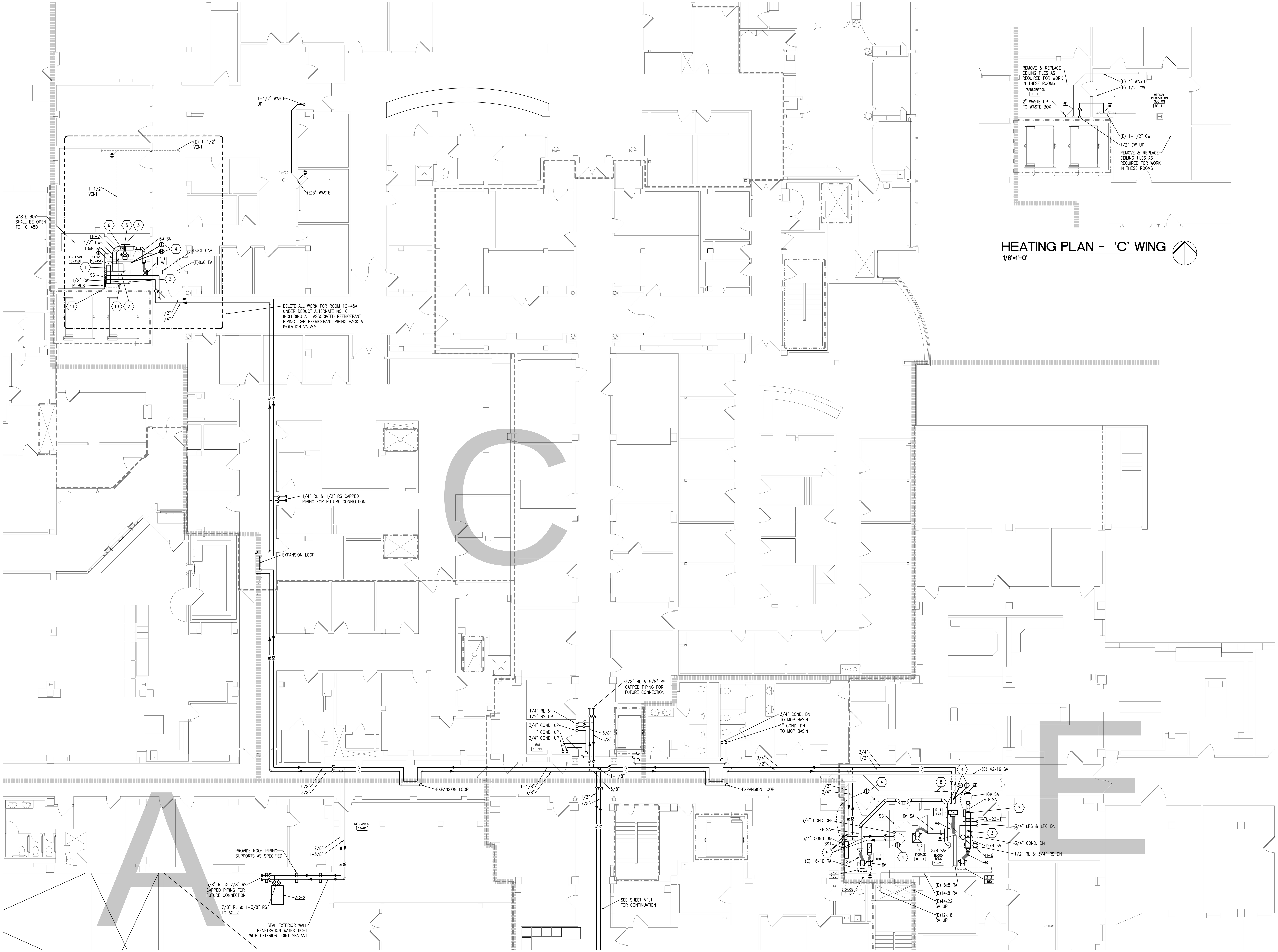
REGISTERED PROFESSIONAL ENGINEER
JOEL C. PECK
PE - 6847
DATE 07/09/2013
NORTH DAKOTA



KEY PLAN

Field	Value
Drawing Title	FIRST FLOOR HEATING PLAN - 'A', 'B' AND 'D' WINGS
Project Title	IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS
Date	July 5, 2013
Scale	1/8" = 1'-0"
VA Project No.	437-13-103
Contract No.	VA263-P-1217 / VA263-C-
Designed By	JP
Checked By	JP
Drawn By	NH
Drawing No.	M1.1
Building No.	1, 9, 46
AutoCAD File Name	2012225_M1.1.dwg
Location	FARGO VA HEALTH CARE SYSTEM FARGO, ND

Department of Veterans Affairs



HEATING PLAN - 'C' WING
1/8'=1'-0'

HEATING PLAN - 'A', 'C' AND 'E' WINGS
1/8'=1'-0'

HVAC PIPING NOTES:

A. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

B. COORDINATE ALL HVAC PIPING INSTALLATION WITH GENERAL, PLUMBING, FIRE PROTECTION, VENTILATION, AND ELECTRICAL CONTRACTORS. INSTALL ALL HVAC PIPING AS HIGH AS POSSIBLE. PROVIDE ALL NECESSARY OFFSETS (DROPS AND RISES) TO KEEP HVAC PIPING TIGHT TO THE STRUCTURE OR DUCTWORK ABOVE. OFFSET HVAC PIPING TO AVOID BEAMS AND INSTALLATION BY ALL TRADES.

C. REFER TO AND COORDINATE WITH THE ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, AND SOFFIT AREAS FOR INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC.

D. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

E. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS AND/OR CEILINGS TO INSTALL NEW HVAC PIPING, EQUIPMENT, ETC. AS REQUIRED. PATCH WALLS AND/OR CEILINGS TO MATCH EXISTING.

F. MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL, CONTROL, AND ACCESS PANELS FOR ACCESSIBILITY.

G. ALL SHUT-OFF VALVES, CONTROL VALVES, STRAINERS, ETC... SHALL BE INSTALLED IN ACCESSIBLE CEILINGS. VALVES SHALL BE LOCATED NOT MORE THAN 2 FEET ABOVE ACOUSTICAL CEILINGS.

H. SHUT-OFF VALVES FOR ALL TERMINAL DEVICES SHALL BE AS ACCESSIBLE AS POSSIBLE TO THE CONTROLLED DEVICE.

I. PROVIDE 1/2" DRAIN VALVE AT ALL LOW POINTS OF EACH SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE 1/2" VENT VALVES AT ALL HIGH POINTS OF EACH SYSTEM TO ENABLE COMPLETE VENTING.

J. INSTALL WALL MOUNTED UNITS AS CLOSE TO THE CEILING AS POSSIBLE. REFER TO MANUFACTURES RECOMMENDATIONS FOR CLEARANCES REQUIRED.

K. PATCH FIREPROOFING AT STRUCTURAL STEEL AND DECK THAT IS DISTURBED DURING CONSTRUCTION. FIRE CAULK ALL PENETRATIONS.

L. DISCONNECT AND RECONNECT ALL DIFFUSERS, GRILLES, AND SPRINKLER HEADS IN CEILINGS INDICATED TO BE TAKEN DOWN AS A RESULT OF WORK ON THIS PROJECT. SEE ARCHITECTURAL SHEETS FOR CEILING REMOVAL AREAS.

1. ROUTE 3/4" CONDENSATE TO SINK DRAIN/DRAIN BOX.
2. ROUTE 1" HUMIDIFIER DRAIN TO SINK DRAIN/DRAIN BOX. PROVIDE REMOVABLE COVER FOR DRAIN BOX.
3. 3/4" DUCT DRAIN FROM DRAIN PAN.
4. LABEL THERMOSTATS AND HUMIDISTATS ACCORDING TO WHAT UNITS THEY SERVE.
5. 3/4" STEAM AND 3/4" CONDENSATE FROM HUMIDIFIER TO DUCT DISTRIBUTION TUBES. PROVIDE BALL VALVES ON BOTH LINES.
6. CONNECT NEW DUCT TO EXISTING DUCT DOWNSTREAM OF EXISTING VAV BOX.
7. DISCONNECT AND REMOVE EXISTING VAV BOX AT THE MAIN. REPLACE WITH NEW VAV BOX AS SHOWN ON THE PLAN WITH HUMIDIFIER.
8. REMOVE EXISTING ABANDONED DUCTS AND CAP BACK AT THE MAIN.
9. 1/4" RL & 1/2" RS TO UNIT.
10. REFER TO HEATING PLAN - 'C' WING ON M1.2 FOR WORK IN THE BASEMENT BELOW THIS AREA.
11. ROUTE 2" WASTE FROM P-808 DOWN TO EXISTING 4" WASTE DIRECTLY BELOW ROOM 1C-45A. REMOVE AND REPLACE EXISTING CEILING TILES AS REQUIRED.

PHASING NOTES:

1. ALL WORK IN FIRST FLOOR ROOMS EXCEPT MECHANICAL ROOMS SHALL OCCUR DURING OVERTIME AND/OR WEEKEND HOURS. SPACES SHALL BE CLEANED AND RETURNED TO WORKING ORDER PRIOR TO USE BY THE VA STAFF DURING NORMAL BUSINESS HOURS.
2. CAREFULLY COORDINATE WITH THE OWNER A MINIMUM OF 2 WEEKS IN ADVANCE PRIOR TO WORK COMMENCING.
3. REFER TO SHEET X1 GENERAL NOTES AND ARCHITECTURAL SHEETS FOR SPECIFIC PHASING INFORMATION FOR INDIVIDUAL SPACES.

Revisions	Date

Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

IMAGE GROUP
IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

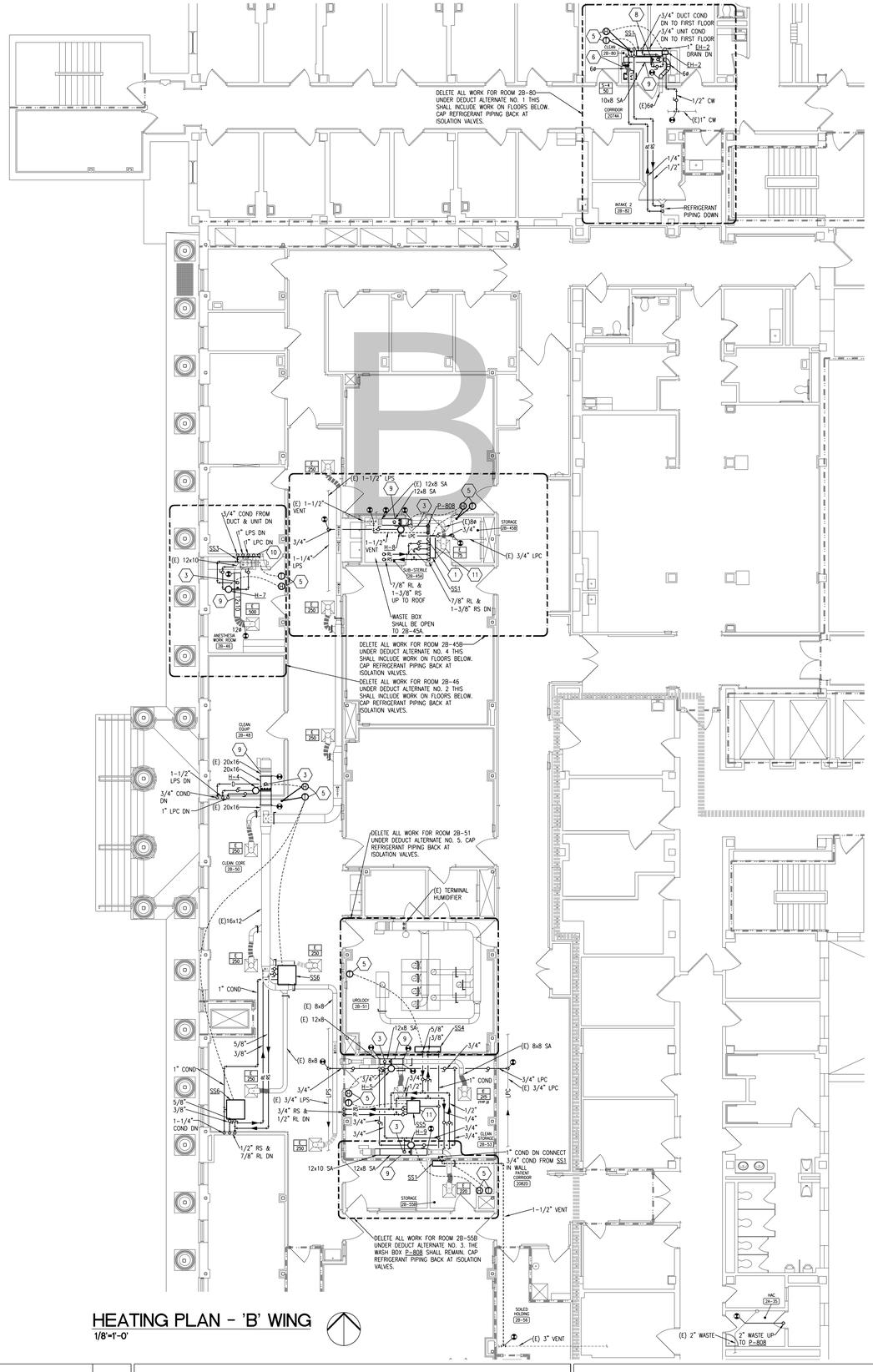
ONE BUILDING SYSTEMS CONSULTANTS
Fargo ▪ Grand Forks ▪ Bismarck
Alexandria ▪ 877.380.0501

REGISTERED PROFESSIONAL ENGINEER JOEL C. PECK PE - 6847 DATE 07/09/2013 NORTH DAKOTA

KEY PLAN: B C E A D

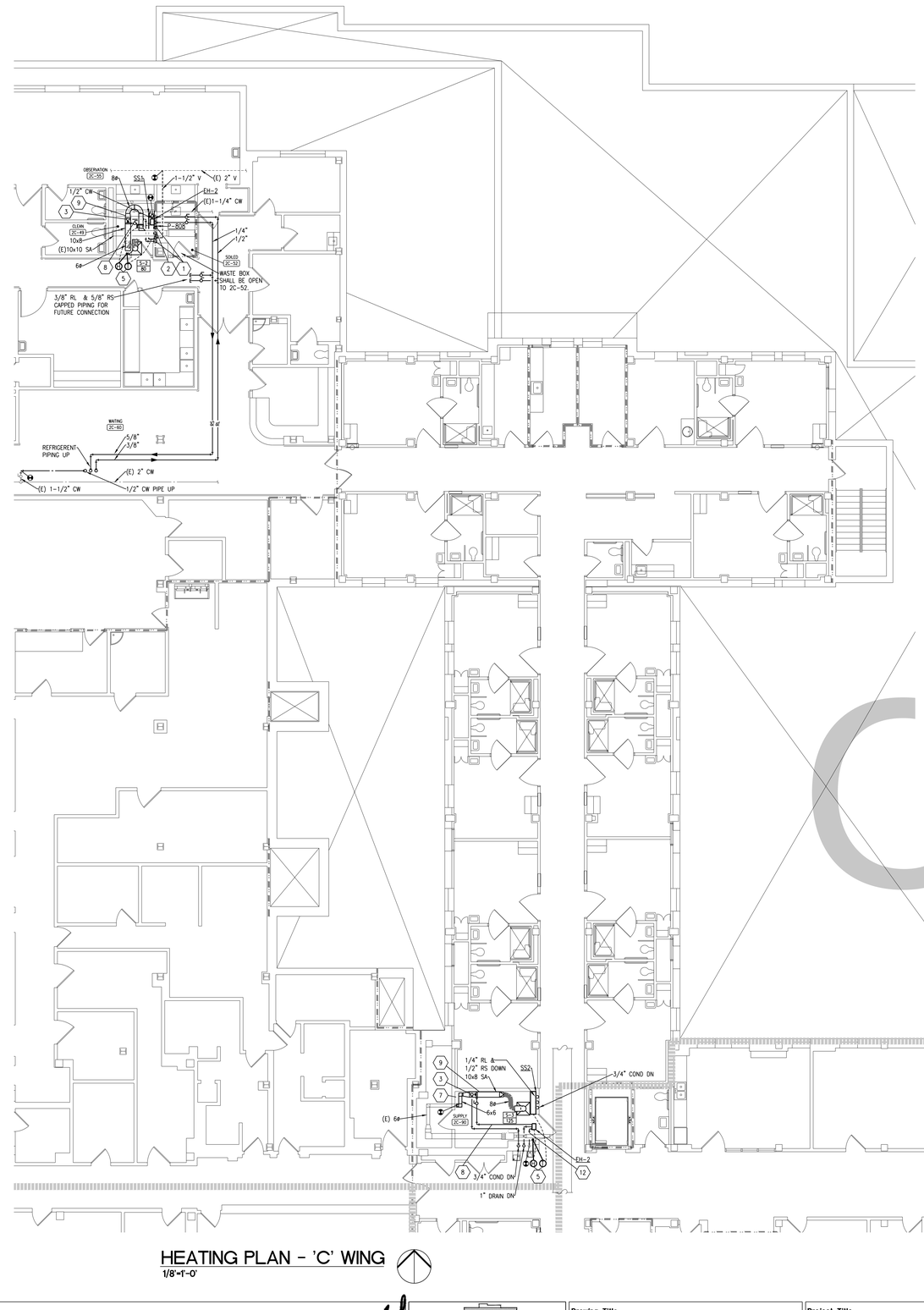
Drawing Title	FIRST FLOOR HEATING PLAN - 'A', 'C' AND 'E' WINGS
Project Title	IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS
Date	July 5, 2013
Scale	1/8" = 1'-0"
VA Project No.	437-13-103
Contract No.	VA263-P-1217 / VA263-C-
Designed By	JP
Checked By	JP
Drawn By	NH
Drawing No.	M1.2
Building No.	1, 9, 46
AutoCAD File Name	2012225_M1.2.dwg
Location	FARGO VA HEALTH CARE SYSTEM FARGO, ND
	Dwg. 10 of 21

Department of Veterans Affairs



HEATING PLAN - 'B' WING

1/8"=1'-0"



HEATING PLAN - 'C' WING

1/8"=1'-0"

HVAC PIPING NOTES:

A. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

B. COORDINATE ALL HVAC PIPING INSTALLATION WITH GENERAL, PLUMBING, FIRE PROTECTION, VENTILATION, AND ELECTRICAL CONTRACTORS. INSTALL ALL HVAC PIPING AS HIGH AS POSSIBLE. PROVIDE ALL NECESSARY OFFSETS (DROPS AND RISES) TO KEEP HVAC PIPING TIGHT TO THE STRUCTURE OR DUCTWORK ABOVE. OFFSET HVAC PIPING TO AVOID BEAMS AND INSTALLATION BY ALL TRADES.

C. REFER TO AND COORDINATE WITH THE ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, AND SOFFIT AREAS FOR INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC.

D. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

E. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS AND/OR CEILINGS TO INSTALL NEW HVAC PIPING, EQUIPMENT, ETC. AS REQUIRED. PATCH WALLS AND/OR CEILINGS TO MATCH EXISTING.

F. MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL, CONTROL, AND ACCESS PANELS FOR ACCESSIBILITY.

G. ALL SHUT-OFF VALVES, CONTROL VALVES, STRAINERS, ETC., SHALL BE INSTALLED IN ACCESSIBLE CEILINGS. VALVES SHALL BE LOCATED NOT MORE THAN 2 FEET ABOVE ACOUSTICAL CEILINGS.

H. SHUT-OFF VALVES FOR ALL TERMINAL DEVICES SHALL BE AS ACCESSIBLE AS POSSIBLE TO THE CONTROLLED DEVICE.

I. PROVIDE 1/2" DRAIN VALVE AT ALL LOW POINTS OF EACH SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE 1/2" VENT VALVES AT ALL HIGH POINTS OF EACH SYSTEM TO ENABLE COMPLETE VENTING.

J. INSTALL WALL MOUNTED UNITS AS CLOSE TO THE CEILING AS POSSIBLE. REFER TO MANUFACTURES RECOMMENDATIONS FOR CLEARANCES REQUIRED.

K. PATCH FIREPROOFING AT STRUCTURAL STEEL AND DECK THAT IS DISTURBED DURING CONSTRUCTION. FIRE CAULK ALL PENETRATIONS.

L. DISCONNECT AND RECONNECT ALL DIFFUSERS, GRILLES, AND SPRINKLER HEADS IN CEILINGS INDICATED TO BE TAKEN DOWN AS A RESULT OF WORK ON THIS PROJECT. SEE ARCHITECTURAL SHEETS FOR CEILING REMOVAL AREAS.

1. ROUTE 3/4" CONDENSATE TO SINK DRAIN/DRAIN BOX.
2. ROUTE 1" HUMIDIFIER DRAIN TO SINK DRAIN/DRAIN BOX. PROVIDE REMOVABLE COVER FOR DRAIN BOX.
3. 3/4" DUCT DRAIN FROM DRAIN PAN.
4. CAP EXISTING DUCT AIR TIGHT AT MAIN.
5. LABEL THERMOSTATS AND HUMIDISTATS ACCORDING TO WHAT UNITS THEY SERVE.
6. BALANCE ROOM RETURN GRILLE TO 40 CFM.
7. BALANCE ROOM RETURN GRILLE TO 100 CFM.
8. 3/4" STEAM AND 3/4" CONDENSATE FROM ELECTRIC HUMIDIFIER TO DUCT DISTRIBUTION TUBES. PROVIDE BALL VALVES ON BOTH LINES.
9. DISCONNECT AND REMOVE EXISTING SUPPLY DUCTWORK AND REPLACE WITH NEW DUCTWORK AS SHOWN ON PLAN IN PREPARATION FOR NEW HUMIDIFIER. REPLACE OR REUSE EXISTING SUPPLY DIFFUSER AS INDICATED.
10. 1/4" RL & 1/2" RS TO UNIT AND DOWN IN WALL TO FIRST FLOOR.
11. 1/4" RL & 1/2" RS TO UNIT
12. PROVIDE 1/2" CW CONNECTION TO HUMIDIFIER WITH SHUT OFF VALVE. CONNECT TO EXISTING 1/2" CW LINE IN WALL.

PHASING NOTES:

1. ALL WORK IN SECOND FLOOR ROOMS EXCEPT MECHANICAL ROOMS SHALL OCCUR DURING OVERTIME AND/OR WEEKEND HOURS. SPACES SHALL BE CLEANED AND RETURNED TO WORKING ORDER PRIOR TO USE BY THE VA STAFF DURING NORMAL BUSINESS HOURS.
2. CAREFULLY COORDINATE WITH THE OWNER A MINIMUM OF 2 WEEKS IN ADVANCE PRIOR TO WORK COMMENCING.
3. REFER TO SHEET X1 GENERAL NOTES AND ARCHITECTURAL SHEETS FOR SPECIFIC PHASING INFORMATION FOR INDIVIDUAL SPACES.

Revisions	Date

Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

IMAGE GROUP
IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

ONE JOB
BUILDING SYSTEMS CONSULTANTS
Fargo ▪ Grand Forks ▪ Bismarck
Alexandria ▪ 877.380.0509

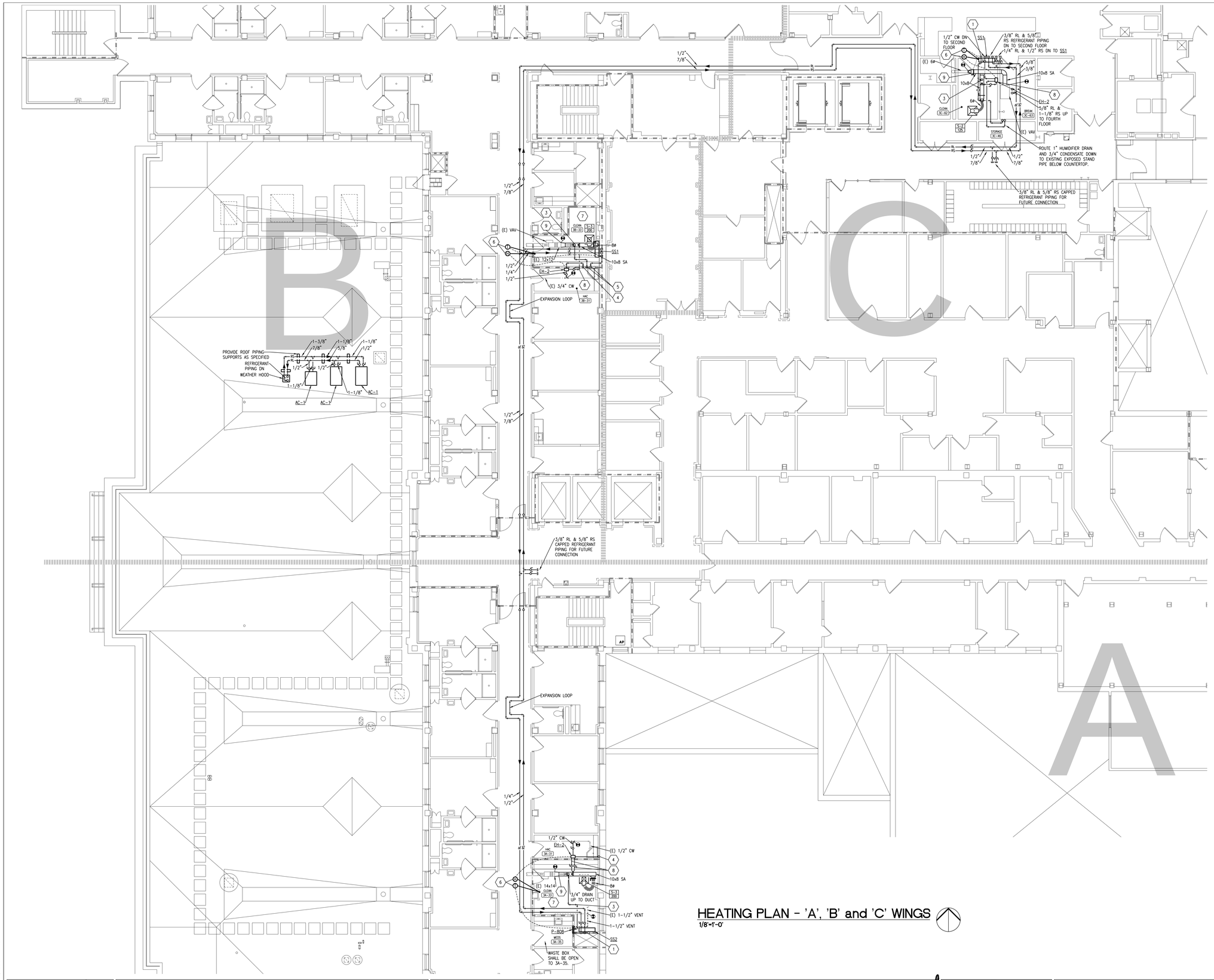
REGISTERED PROFESSIONAL ENGINEER
JOEL C. PECK
PE - 6847
DATE 07/05/2013
NORTH DAKOTA

KEY PLAN

Drawing Title	SECOND FLOOR HEATING PLAN - 'B' AND 'C' WINGS
Project Title	IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS
Date	July 5, 2013
Scale	1/8" = 1'-0"
VA Project No.	437-13-103
Contract No.	VA263-P-1217 VA263-C-
Designed By	JP
Checked By	JP
Drawn By	NH
Drawing No.	M2.1
Building No.	1, 9, 46
AutoCAD File Name	2012225_M2.1.dwg
Location	FARGO VA HEALTH CARE SYSTEM FARGO, ND
	Dwg. 11 of 21

Department of Veterans Affairs

F:\Projects\2012225\DWG\2012225_M2.1.dwg Jul 03, 2013 - 11:37am



HEATING PLAN - 'A', 'B' and 'C' WINGS

1/8"=1'-0"

HVAC PIPING NOTES:

A. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

B. COORDINATE ALL HVAC PIPING INSTALLATION WITH GENERAL, PLUMBING, FIRE PROTECTION, VENTILATION, AND ELECTRICAL CONTRACTORS. INSTALL ALL HVAC PIPING AS HIGH AS POSSIBLE. PROVIDE ALL NECESSARY OFFSETS (DROPS AND RISES) TO KEEP HVAC PIPING TIGHT TO THE STRUCTURE OR DUCTWORK ABOVE. OFFSET HVAC PIPING TO AVOID BEAMS AND INSTALLATION BY ALL TRADES.

C. REFER TO AND COORDINATE WITH THE ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, AND SOFFIT AREAS FOR INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC.

D. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

E. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS AND/OR CEILINGS TO INSTALL NEW HVAC PIPING, EQUIPMENT, ETC. AS REQUIRED. PATCH WALLS AND/OR CEILINGS TO MATCH EXISTING.

F. MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL, CONTROL, AND ACCESS PANELS FOR ACCESSIBILITY.

G. ALL SHUT-OFF VALVES, CONTROL VALVES, STRAINERS, ETC., SHALL BE INSTALLED IN ACCESSIBLE CEILINGS. VALVES SHALL BE LOCATED NOT MORE THAN 2 FEET ABOVE ACOUSTICAL CEILINGS.

H. SHUT-OFF VALVES FOR ALL TERMINAL DEVICES SHALL BE AS ACCESSIBLE AS POSSIBLE TO THE CONTROLLED DEVICE.

I. PROVIDE 1/2" DRAIN VALVE AT ALL LOW POINTS OF EACH SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE 1/2" VENT VALVES AT ALL HIGH POINTS OF EACH SYSTEM TO ENABLE COMPLETE VENTING.

J. INSTALL WALL MOUNTED UNITS AS CLOSE TO THE CEILING AS POSSIBLE. REFER TO MANUFACTURES RECOMMENDATIONS FOR CLEARANCES REQUIRED.

K. PATCH FIREPROOFING AT STRUCTURAL STEEL AND DECK THAT IS DISTURBED DURING CONSTRUCTION. FIRE CAULK ALL PENETRATIONS.

L. DISCONNECT AND RECONNECT ALL DIFFUSERS, GRILLES, AND SPRINKLER HEADS IN CEILINGS INDICATED TO BE TAKEN DOWN AS A RESULT OF WORK ON THIS PROJECT. SEE ARCHITECTURAL SHEETS FOR CEILING REMOVAL AREAS.

1. ROUTE 3/4" CONDENSATE TO SINK DRAIN/DRAIN BOX. PROVIDE COVER FOR DRAIN BOX.
2. ROUTE 1" HUMIDIFIER DRAIN TO SINK DRAIN/DRAIN BOX. PROVIDE REMOVABLE COVER FOR DRAIN BOX.
3. 3/4" DUCT DRAIN FROM DRAIN PAN.
4. ROUTE 1" HUMIDIFIER DRAIN DOWN TO MOP BASIN
5. ROUTE 3/4" CONDENSATE DOWN TO MOP BASIN
6. LABEL THERMOSTATS AND HUMIDISTATS ACCORDING TO WHAT UNITS THEY SERVE.
7. BALANCE ROOM RETURN GRILLE TO 170 CFM.
8. ROUTE 3/4" STEAM AND 3/4" CONDENSATE FROM ELECTRIC HUMIDIFIER TO DUCT DISTRIBUTION TUBES. PROVIDE SHUT OFF VALVES ON BOTH LINES.
9. DISCONNECT AND REMOVE EXISTING DUCTWORK AND REPLACE WITH NEW DUCTWORK AS SHOWN ON PLAN IN PREPARATION FOR HUMIDIFIER.

PHASING NOTES:

1. ALL WORK IN THIRD FLOOR ROOMS EXCEPT MECHANICAL ROOMS SHALL OCCUR DURING OVERTIME AND/OR WEEKEND HOURS. SPACES SHALL BE CLEANED AND RETURNED TO WORKING ORDER PRIOR TO USE BY THE VA STAFF DURING NORMAL BUSINESS HOURS.
2. CAREFULLY COORDINATE WITH THE OWNER A MINIMUM OF 2 WEEKS IN ADVANCE PRIOR TO WORK COMMENCING.
3. REFER TO SHEET X1 GENERAL NOTES AND ARCHITECTURAL SHEETS FOR SPECIFIC PHASING INFORMATION FOR INDIVIDUAL SPACES.

Revisions | Date

Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

ONE BUILDING SYSTEMS CONSULTANTS
Fargo ■ Grand Forks ■ Bismarck
Alexandria ■ 877.380.0509

REGISTERED PROFESSIONAL ENGINEER — JOEL C. PECK — PE - 6847 — DATE 07/05/2013 — NORTH DAKOTA

KEY PLAN

Drawing Title: THIRD FLOOR HEATING PLAN - 'A', 'B', AND 'C' WINGS		Project Title: IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS	Date: July 5, 2013
VA Project No.: 437-13-103	Contract No.: VA263-P-1217 VA263-C-	Designed By: JP	Checked By: JP	Drawn By: NH	Scale: 1/8" = 1'-0"
Building No.: 1, 9, 46	AutoCAD File Name: 2012225_M3.1.dwg	Location: FARGO VA HEALTH CARE SYSTEM FARGO, ND			Drawing No.: M3.1 Dwg. 12 of 21

Department of Veterans Affairs

F:\Projects\2012225\DWG\2012225_M3.1.dwg Jul 05, 2013 - 11:37am

DIFFUSER, REGISTER AND GRILLE SCHEDULE

UNIT NO.	MATERIAL	TYPE	NECK SIZE	FRAME SIZE	MOUNTING	AIR	OBD	REMARKS
S-1	STEEL	SPD	6"	12x24	GYP	SA	N	
S-2	STEEL	SPD	6"	24x24	LIT	SA	N	
S-3	STEEL	SPD	8"	24x24	LIT	SA	N	
S-4	STEEL	SPD	6"	12x24	LIT	SA	N	
R-1	ALUM	ECG	-	12x24	LIT	RA	N	

SPD SQUARE PLAQUE DIFFUSER
LIT LAY-IN-TILE
GYP CONCEALED IN GYPSUM CEILING
FLOOR CONCEALED IN FLOOR
ECG EGG CRATE GRILLE

SPLIT SYSTEM OUTDOOR CONDENSING UNIT SCHEDULE

UNIT NO.	UNIT TYPE	AMBIENT OUTDOOR TEMPERATURE DB	WB	COOLING MBH	IEER	HEATING MBH	COP	ELECTRICAL MCA	VOLT	PH	MOCP	DISC BY	NOTES
AC-1	VERTICAL DISCHARGE	95	73	72.0	18.8	-	-	30	208	3	35	EC	1,2
		95	73	96.0	18.8	-	-	43	208	3	50	EC	1,2
		95	73	120.0	18.8	-	-	43	208	3	50	EC	1,2
AC-2	VERTICAL DISCHARGE	95	73	96.0	18.8	-	-	43	208	3	50	EC	2
AC-3	VERTICAL DISCHARGE	95	73	72.0	21.5	-	-	30	208	3	35	EC	2

IEER INTEGRATED ENERGY EFFICIENCY RATIO
COP COEFFICIENT OF PERFORMANCE
MCA MINIMUM CIRCUIT AMPACITY

DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR
WPD WATER PRESSURE DROP, FT

NOTES:
1. PROVIDE 3 OUTDOOR CONDENSING UNITS TO MEET TOTAL SYSTEM CAPACITY FOR AC-1.
2. CONDENSING UNIT AND SYSTEM PIPING SIZED FOR 20% FUTURE. CAPACITY.

STEAM HUMIDIFIER SCHEDULE

HUMID. NO.	ROOM SERVED	CFM	ABSORPTION DISTANCE	EAT Db	EAT %RH	LAT Db	LAT %RH	STEAM PSIG ENT. ON-OFF VALVE	STEAM PSIG ENT. CNTRL. VALVE	ON-OFF & CNTRL. VALVE LBS/ HR	TRAP LBS/ HR
H-1	BB-15	2000	1 FT	55	20	55	68	7	5	40	-
H-2	1D-64	150	1 FT	55	20	55	68	7	5	5	-
H-3	1D-68	60	1 FT	55	20	55	68	7	5	2	-
H-4	2B-50	2000	1 FT	55	20	55	68	7	5	40	-
H-5	2B-53	470	1 FT	55	20	55	68	7	5	11	-
H-6	1E-20	375	1 FT	55	20	55	68	7	5	9	-
H-7	2B-46	500	1 FT	55	20	55	68	7	5	10	-
H-8	2B-45B	75	1 FT	55	20	55	68	7	5	2	-
H-9	2B-55B	220	1 FT	55	20	55	68	7	5	5	-
H-10	BB-24	225	1 FT	55	20	55	68	7	5	5	-

NOTE:

ELECTRIC STEAM HUMIDIFIER SCHEDULE

HUMID. NO.	TYPE	CFM MAX	ABSORPTION DISTANCE	EAT Db	EAT %RH	ELECTRICAL DATA VOLTAGE	PHASE	AMPS	MAX FUSE SIZE	KW	DISC BY	OUTPUT LBS/ HR	NOTE
EH-1	ELECTRIC	-	2 FT	-	-	208	1	12.7	20	2.6	EC	6.9	1
EH-2	ELECTRIC	240	2 FT	55	20	120	1	15.9	20	1.9	EC	5	2,3

EC ELECTRICAL CONTRACTOR
MC MECHANICAL CONTRACTOR
DISC DISCONNECT

NOTE:
1 PROVIDE REMOTE BLOWER PACK ACCESSORY AND MODULATING HUMIDISTAT WITH HUMIDIFIER.
2 PROVIDE RSD-10 DISTRIBUTOR KIT FOR INSTALLATION IN A DUCT.
3 PROVIDE MODULATING HUMIDISTAT, MODULATING HIGH LIMIT HUMIDISTAT, AND AIR PROVING SWITCH.

AIR TERMINAL UNIT, SINGLE DUCT

UNIT NO.	CFM MAX	CFM MIN	INLET SIZE	MAX SP AT MAX CFM	SOUND MAX SP	SOUND NC	EAT	EWT	GPM	MAX WPD	PIPE RUNOUT SIZE TO COIL	CFM AT MIN. BTUH	MIN. BTUH	CONTROL TYPE
TU-22-1	375	250	6"	0.35	1.5	35	55.0	N/A	N/A	N/A	NO RE-HEAT COIL	N/A	N/A	DDC

NOTES:
1 PROVIDE DUCT TRANSITION AT UNIT WHERE UNIT INLET SIZE AND DUCT RUNOUT SIZE ARE DIFFERENT.
2 THE UNIT MAXIMUM SP IS THE PRESSURE DIFFERENCE BETWEEN THE UNIT INLET AND DISCHARGE. IT IS ALSO THE MINIMUM PRESSURE REQUIRED AT THE UNIT INLET TO OBTAIN THE RATED CFM.

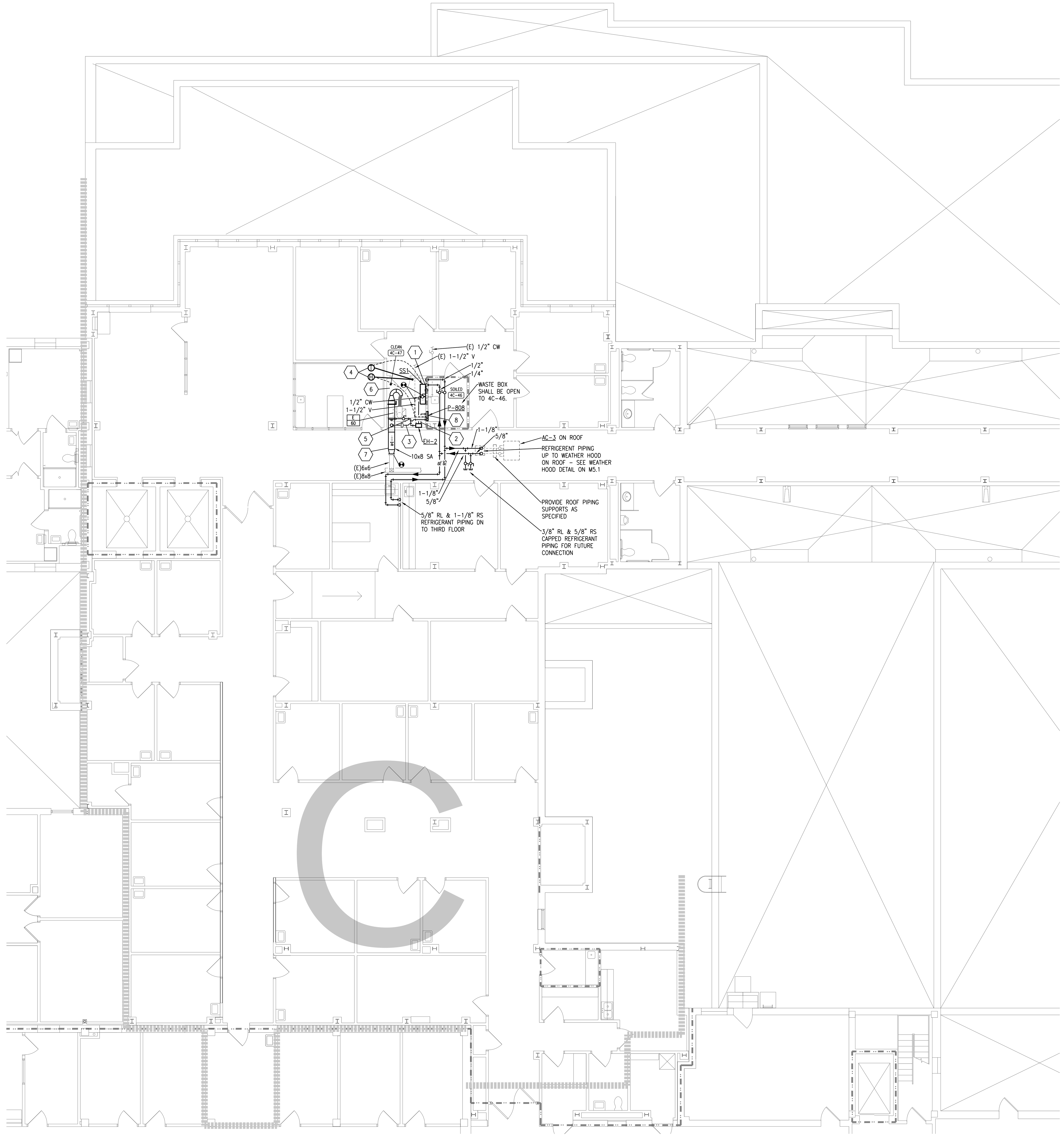
SPLIT SYSTEM FAN COIL UNIT SCHEDULE

UNIT NO.	INDOOR UNIT TYPE	TYPE	CFM	ESP	COOLING SETPOINT	COOLING TOTAL MBH	COOLING SENS MBH	HEATING SETPOINT	HEATING MBH	ELECTRICAL MCA	VOLT	PH	DISC BY	NOTES
SS1	WALL MOUNTED	H/WM	260	0.4	75/63	7.5	6.4	-	-	0.4	208	1	EC	1,4,5
SS2	WALL MOUNTED	H/WM	280	0.4	75/63	9.5	7.3	-	-	0.4	208	1	EC	1,4,5
SS3	WALL MOUNTED	H/WM	290	0.4	75/63	12.0	8.9	-	-	0.4	208	1	EC	1,4,5
SS4	WALL MOUNTED	H/WM	635	0.4	75/63	24.0	18.0	-	-	0.6	208	1	EC	1,4,5
SS5	CEILING MOUNTED	CM	495	0.4	75/63	18.0	13.0	-	-	0.9	208	1	EC	1,3,4,5
SS6	CEILING MOUNTED	CM	1220	0.4	75/63	48.0	35.3	-	-	1.5	208	1	EC	1,2,4,5

CON CONSOLE
CM CEILING MOUNTED
H HORIZONTAL
WM WALL MOUNTED
MCA MINIMUM CIRCUIT AMPACITY

DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR

NOTES:
1. UNIT SHALL HAVE AN MOP OF 15A.
2. UNIT SHALL BE A 3'X3' CEILING CASETTE MODULE.
3. UNIT SHALL BE A 2'X2' CEILING CASETTE MODULE.
4. PROVIDE WITH UNIT MOUNTED CONDENSATE PUMP.
5. SYSTEM PIPING SIZED FOR 20% FUTURE CAPACITY.



HEATING PLAN - 'C' WING

1/8"=1'-0"

HVAC PIPING NOTES:

A. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

B. COORDINATE ALL HVAC PIPING INSTALLATION WITH GENERAL, PLUMBING, FIRE PROTECTION, VENTILATION, AND ELECTRICAL CONTRACTORS. INSTALL ALL HVAC PIPING AS HIGH AS POSSIBLE. PROVIDE ALL NECESSARY OFFSETS (DROPS AND RISES) TO KEEP HVAC PIPING TIGHT TO THE STRUCTURE OR DUCTWORK ABOVE. OFFSET HVAC PIPING TO AVOID BEAMS AND INSTALLATION BY ALL TRADES.

C. REFER TO AND COORDINATE WITH THE ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, AND SOFFIT AREAS FOR INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC.

D. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW HVAC PIPING, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

E. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS AND/OR CEILINGS TO INSTALL NEW HVAC PIPING, EQUIPMENT, ETC. AS REQUIRED. PATCH WALLS AND/OR CEILINGS TO MATCH EXISTING.

F. MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL, CONTROL, AND ACCESS PANELS FOR ACCESSIBILITY.

G. ALL SHUT-OFF VALVES, CONTROL VALVES, STRAINERS, ETC... SHALL BE INSTALLED IN ACCESSIBLE CEILINGS. VALVES SHALL BE LOCATED NOT MORE THAN 2 FEET ABOVE ACOUSTICAL CEILINGS.

H. SHUT-OFF VALVES FOR ALL TERMINAL DEVICES SHALL BE AS ACCESSIBLE AS POSSIBLE TO THE CONTROLLED DEVICE.

I. PROVIDE 1/2" DRAIN VALVE AT ALL LOW POINTS OF EACH SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE 1/2" VENT VALVES AT ALL HIGH POINTS OF EACH SYSTEM TO ENABLE COMPLETE VENTING.

J. INSTALL WALL MOUNTED UNITS AS CLOSE TO THE CEILING AS POSSIBLE. REFER TO MANUFACTURES RECOMMENDATIONS FOR CLEARANCES REQUIRED.

K. PATCH FIREPROOFING AT STRUCTURAL STEEL AND DECK THAT IS DISTURBED DURING CONSTRUCTION. FIRE CAULK ALL PENETRATIONS.

L. DISCONNECT AND RECONNECT ALL DIFFUSERS, GRILLES, AND SPRINKLER HEADS IN CEILINGS INDICATED TO BE TAKEN DOWN AS A RESULT OF WORK ON THIS PROJECT. SEE ARCHITECTURAL SHEETS FOR CEILING REMOVAL AREAS.

1. ROUTE 3/4" CONDENSATE TO SINK DRAIN/DRAIN BOX.
2. ROUTE 1" HUMIDIFIER DRAIN TO SINK DRAIN/DRAIN BOX. PROVIDE REMOVABLE COVER FOR DRAIN BOX.
3. 3/4" DUCT DRAIN FROM DRAIN PAN DOWN TO DRAIN BOX
4. LABEL THERMOSTATS AND HUMIDISTATS ACCORDING TO WHAT UNITS THEY SERVE.
5. ROUTE 3/4" STEAM AND 3/4" CONDENSATE FROM ELECTRIC HUMIDIFIER TO DUCT DISTRIBUTION TUBES. PROVIDE SHUT OFF VALVES ON BOTH LINES.
6. BALANCE ROOM RETURN TO 50 CFM
7. DISCONNECT AND REMOVE EXISTING DUCT AND REPLACE WITH NEW DUCTWORK AS SHOWN ON PLAN IN PREPARATION FOR HUMIDIFIER.
8. P-808 SHALL BE INSTALLED IN CABINET BELOW THE COUNTERTOP. CUT BACK OF CABINET AS REQUIRED FOR INSTALLATION OF DRAIN BOX. TIE 2" WASTE FROM WASTE BOX TO 2" SINK DRAIN IN WALL.

PHASING NOTES:

1. ALL WORK IN FOURTH FLOOR ROOMS EXCEPT MECHANICAL ROOMS SHALL OCCUR DURING OVERTIME AND/OR WEEKEND HOURS. SPACES SHALL BE CLEANED AND RETURNED TO WORKING ORDER PRIOR TO USE BY THE VA STAFF DURING NORMAL BUSINESS HOURS.
2. CAREFULLY COORDINATE WITH THE OWNER A MINIMUM OF 2 WEEKS IN ADVANCE PRIOR TO WORK COMMENCING.
3. REFER TO SHEET X1 GENERAL NOTES AND ARCHITECTURAL SHEETS FOR SPECIFIC PHASING INFORMATION FOR INDIVIDUAL SPACES.

Revisions | Date

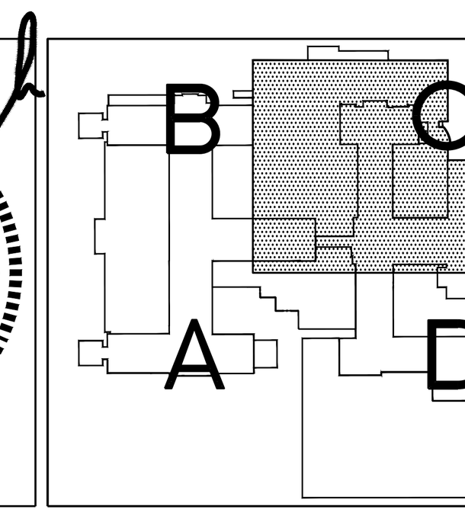
Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

IMAGE GROUP
IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

ONE BUILDING SYSTEMS CONSULTANTS
Fargo ▪ Grand Forks ▪ Bismarck
Alexandria ▪ 877.380.0501

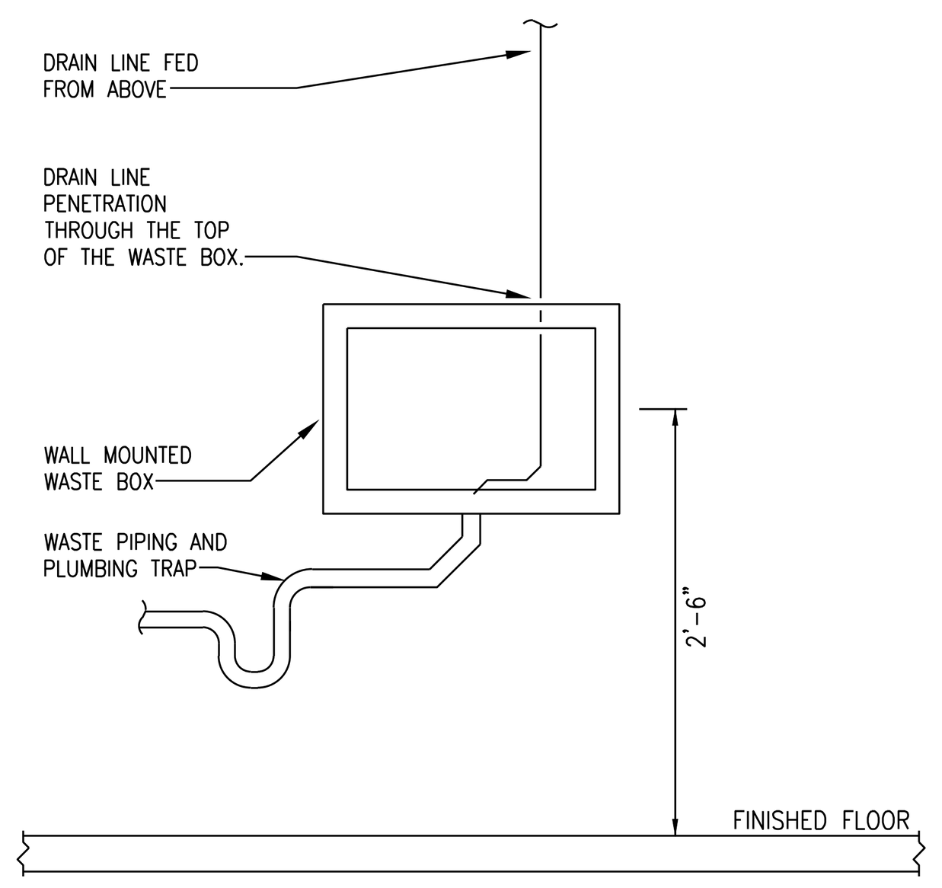
REGISTERED PROFESSIONAL ENGINEER JOEL C. PECK PE - 6847 DATE 07/09/2013 NORTH DAKOTA



KEY PLAN

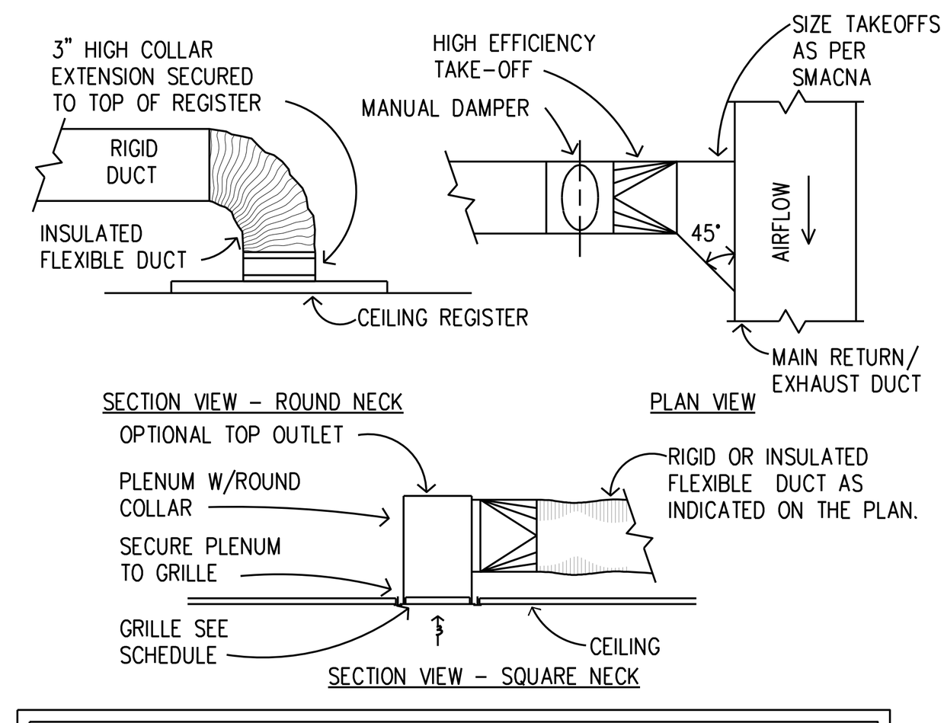
Drawing Title	FOURTH FLOOR HEATING PLAN - 'C' WING AND SCHEDULES
Project Title	IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS
Date	July 5, 2013
Scale	1/8" = 1'-0"
VA Project No.	437-13-103
Contract No.	VA263-P-1217 / VA263-C-
Designed By	JP
Checked By	JP
Drawn By	NH
Drawing No.	M4.1
Building No.	1, 9, 46
AutoCAD File Name	2012225_M4.1.dwg
Location	FARGO VA HEALTH CARE SYSTEM FARGO, ND
	Dwg. 13 of 21

Department of Veterans Affairs



14 / M5.1 WALL WASTE BOX DETAIL

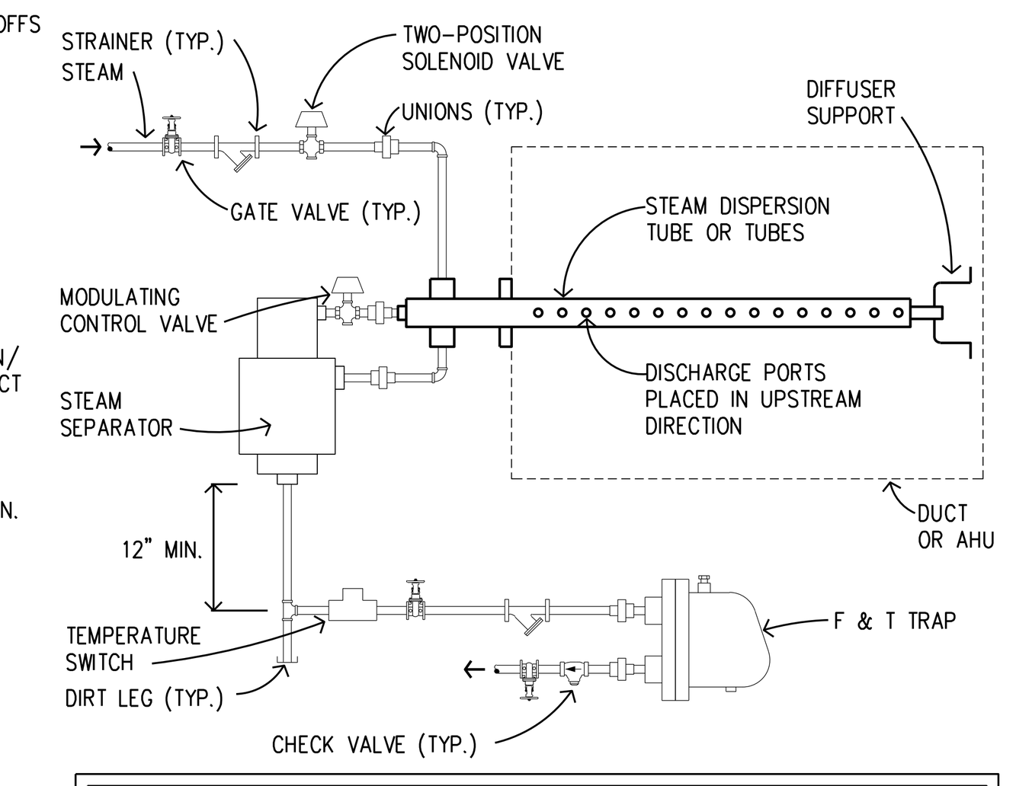
SCALE: NTS



NOTES:
1. MAXIMUM FLEX DUCT LENGTH ALLOWED: 5'-0".
2. SUPPORT FLEX DUCT EVERY 3'-0".
3. SPIN-INS OR CONICAL TAKE-OFFS ARE NOT ALLOWED.
4. PROVIDE VOLUME DAMPER. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST INSULATION. ANY SHORT ARM VOLUME DAMPERS THAT ARE INSTALLED WILL BE REMOVED & REPLACED WITH LONG ARM DAMPERS.

10 / M5.1 RETURN/EXHAUST DUCT TO GRILLE DETAIL

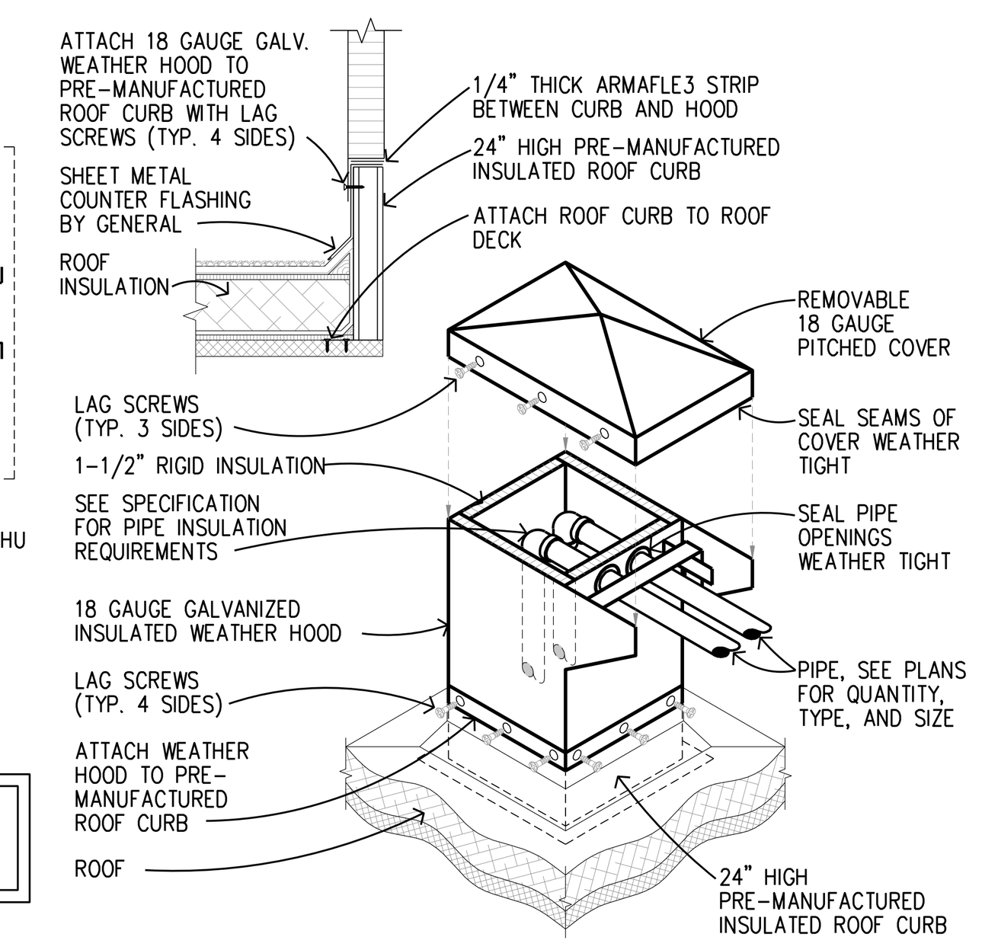
SCALE: NTS



NOTES:
1. DISPERSION TUBES SHALL BE MANIFOLDED AS REQUIRED.

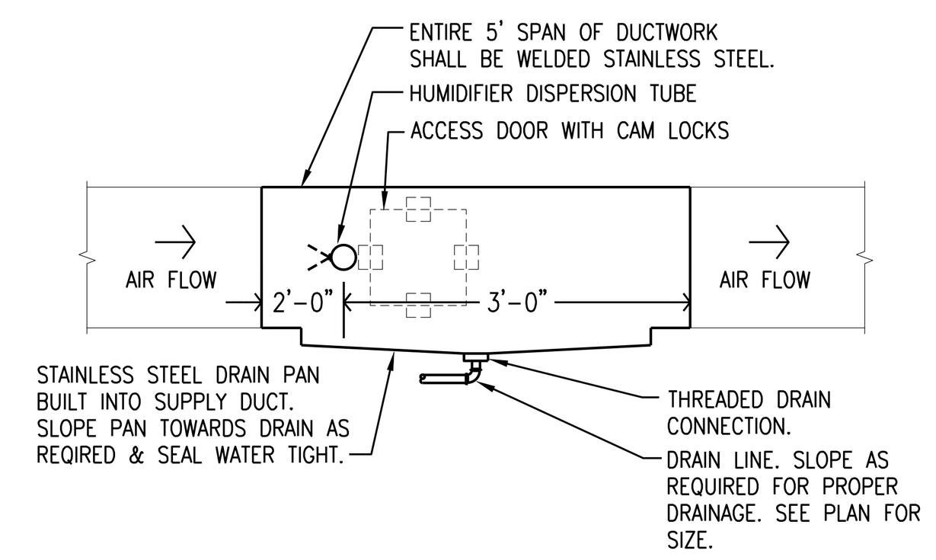
6 / M5.1 STEAM HUMIDIFIER (HORIZONTAL TYPE) DETAIL

SCALE: NTS



4 / M5.1 ROOF PIPING PENETRATION WEATHER HOOD DETAIL

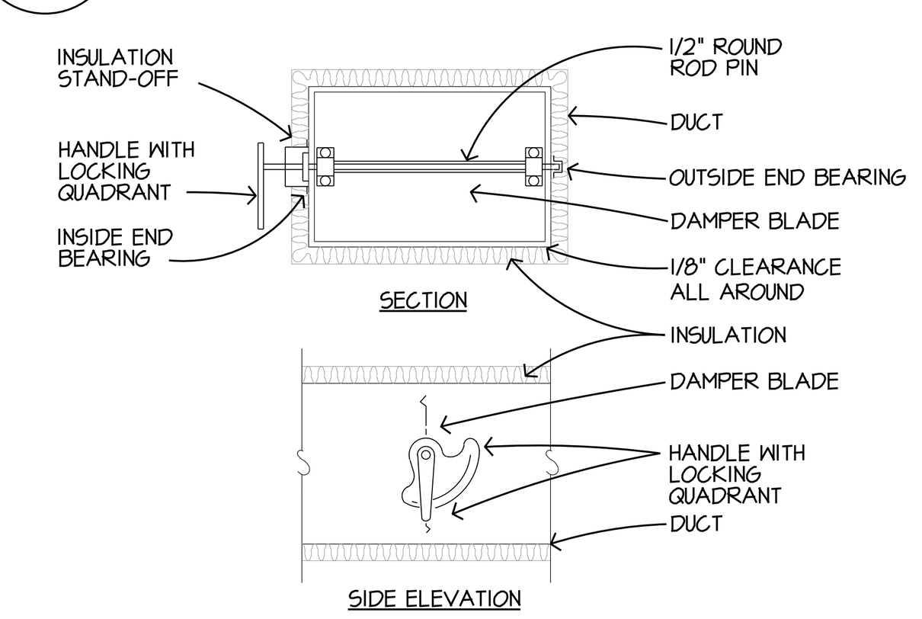
SCALE: NTS



NOTES:
1. SEE PLAN/SPEC FOR QUANTITY OF DISPERSION TUBES.
2. ALL DUCT & SEAMS IN THE HUMIDIFER SECTION SHALL BE WELDED STAINLESS STEEL 2'-0" UPSTREAM & 3'-0" DOWNSTREAM FROM HUMIDIFIER DISPERSION TUBE.
3. PROVIDE 12"x12" GASKETED ACCESS IN DUCT AT HUMIDIFIER (ADJACENT MOUNTED) OR AT STEAM HOSE (REMOTE MOUNTED).

13 / M5.1 HUMIDIFIER DRAIN PAN DETAIL

SCALE: NTS



NOTES:
I. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.

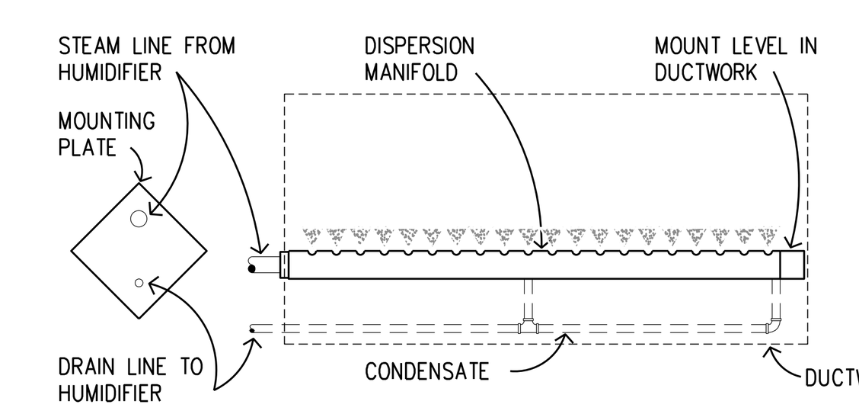
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

3. VOLUME DAMPERS ARE REQUIRED AT ALL BRANCH LOCATIONS.

4. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST ANY INSULATION. ANY SHORT ARM VOLUME DAMPERS THAT ARE INSTALLED WILL BE REMOVED & REPLACED WITH LONG ARM DAMPERS.

9 / M5.1 VOLUME DAMPER DETAIL

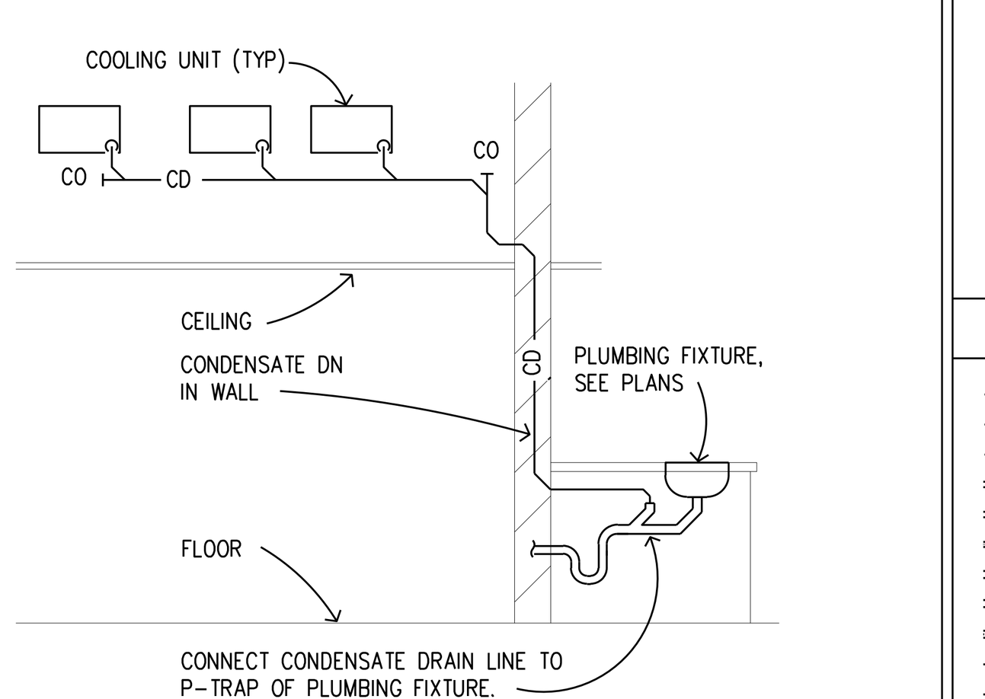
SCALE: NTS



NOTES:
I. ANY DUCT SEAMS 2' UPSTREAM & 3' DOWNSTREAM FROM HUMIDIFIER ARE TO BE WELDED STAINLESS STEEL.
2. PROVIDE I2"x12" GASKETED ACCESS IN DUCT AT HUMIDIFIER (ADJACENT MOUNTED) OR AT STEAM HOSE (REMOTE MOUNTED).

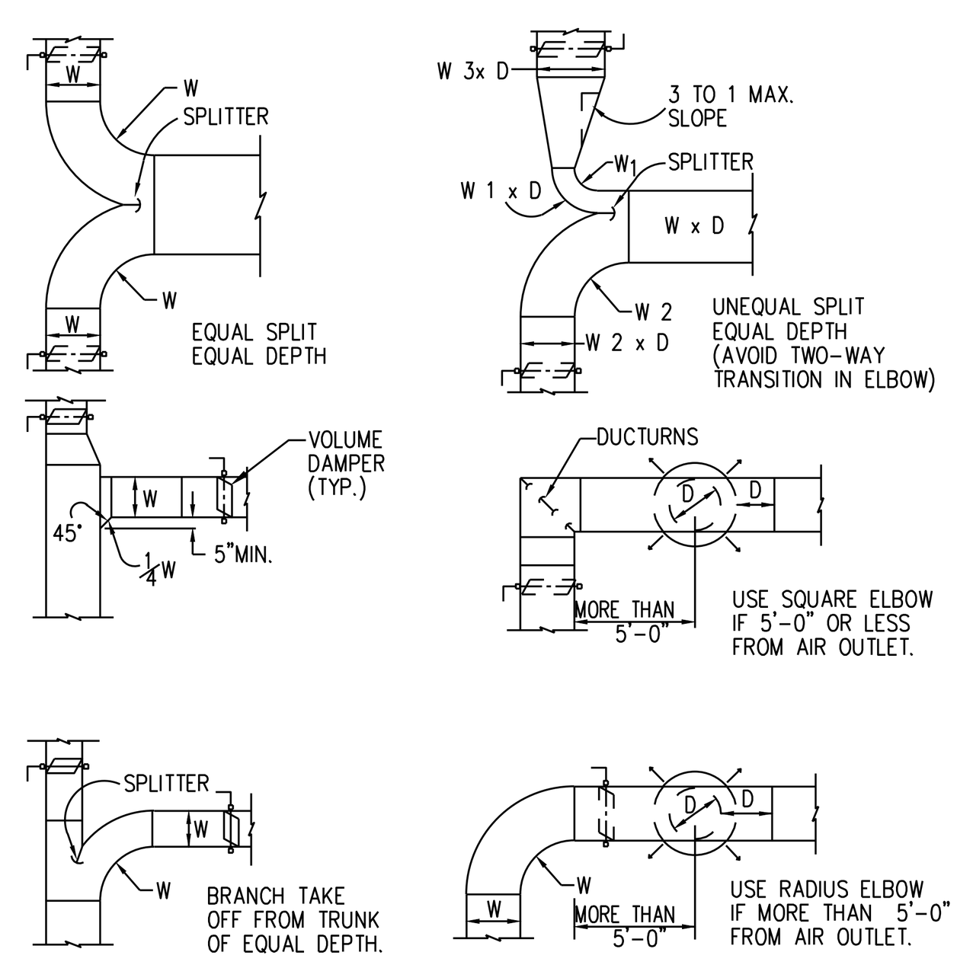
5 / M5.1 ELECTRIC HUMIDIFIER DISPERSION TUBE DETAIL

SCALE: NTS



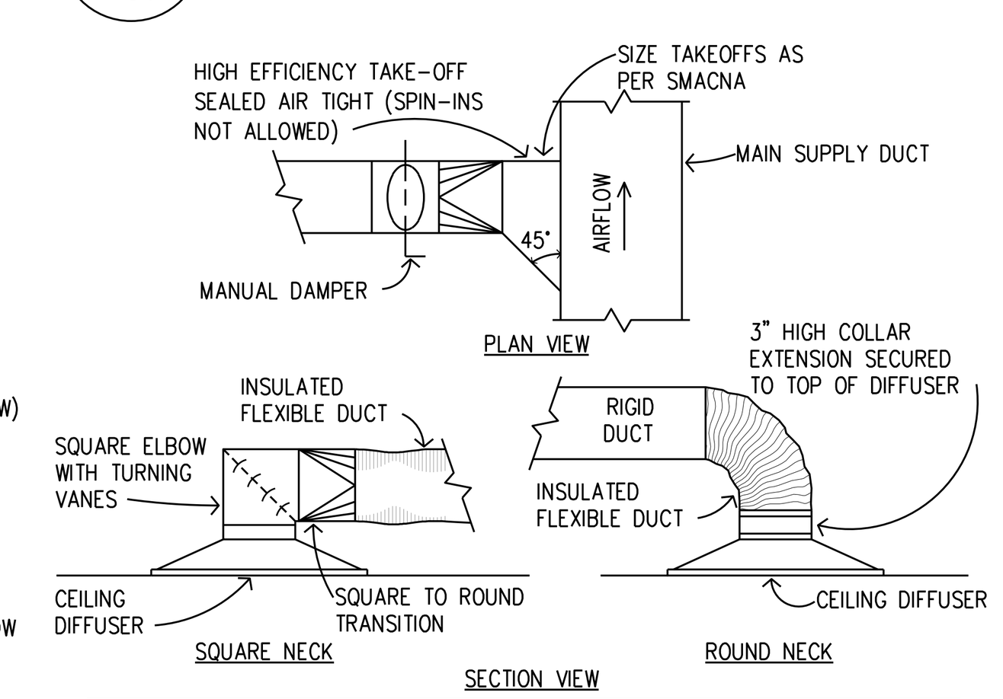
3 / M5.1 COOLING UNIT CONDENSATE

SCALE: NTS



12 / M5.1 DUCT CONNECTION DETAILS

SCALE: NTS



NOTES:
1. MAXIMUM FLEX DUCT LENGTH ALLOWED: 5'-0".
2. SUPPORT FLEX DUCT EVERY 3'-0".
3. SPIN-INS OR CONICAL TAKE-OFFS ARE NOT ALLOWED.
4. ALL FLEX DUCT TO BE BANDED AND ENDS TAPED.
5. PROVIDE VOLUME DAMPER. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST INSULATION. ANY SHORT ARM VOLUME DAMPERS THAT ARE INSTALLED WILL BE REMOVED & REPLACED WITH LONG ARM DAMPERS.

8 / M5.1 SUPPLY DUCT TO DIFFUSER DETAIL

SCALE: NTS

SEQUENCE OF OPERATION:

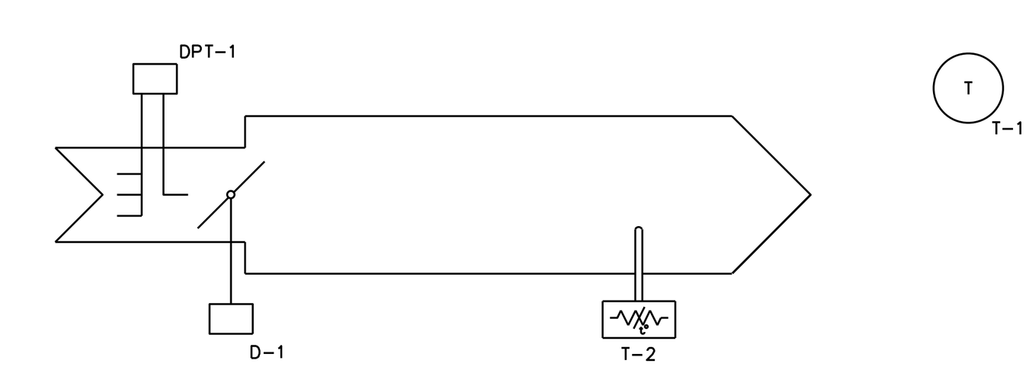
Occupied/Unoccupied Mode: A time schedule shall control the terminal unit mode. The time schedule (adjustable) shall be set so that the space is in the occupied mode 24 hours a day/7 days a week. Initially, all terminal units shall use the same time schedule.

Night Cycle: In the unoccupied mode, if the space temperature (T-1) rises above the unoccupied cooling temperature setpoint, the terminal unit shall activate the night cycle to signal the air handling unit to start. The night cycle shall remain active until the space temperature is satisfied or the time schedule changes the unit to the occupied mode.

Cooling Mode: The terminal unit shall start in the dead band mode. If the space temperature (T-1) is above the cooling setpoint, the unit shall be in the cooling mode. If the space temperature (T-1) rises above 90 degrees (adj.) or falls below 50 degrees (adj.), an alarm shall be generated at the operator's workstation.

Damper Control: In the cooling mode, the inlet damper (D-1) shall modulate the supply airflow between the minimum airflow setpoint and the maximum airflow setpoint to maintain the space temperature (T-1) at the cooling setpoint.

Airflow and Temperature Monitoring: Monitor supply airflow (DPT-1) and supply air temperature (T-2).

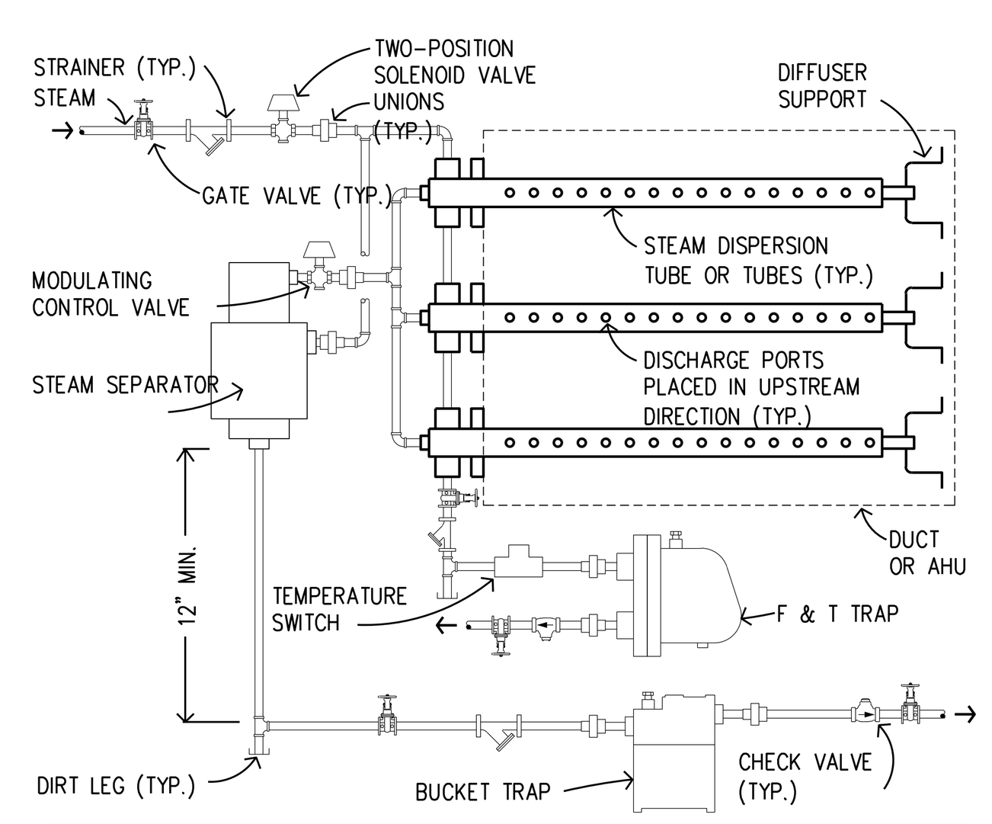


POINT SCHEDULE

CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	BIN
T-1	SpaceTempStpt	SPACE TEMPERATURE SETPOINT	X						
T-1	SpaceTemp	SPACE TEMPERATURE	X				X	X	
DPT-1	Airflow	AIRFLOW	X						
T-2	DischTemp	DISCHARGE AIR TEMPERATURE	X						
D-1	Damper	DAMPER CONTROL			X				

2 / M5.1 VAV TERMINAL UNIT CONTROL DIAGRAM

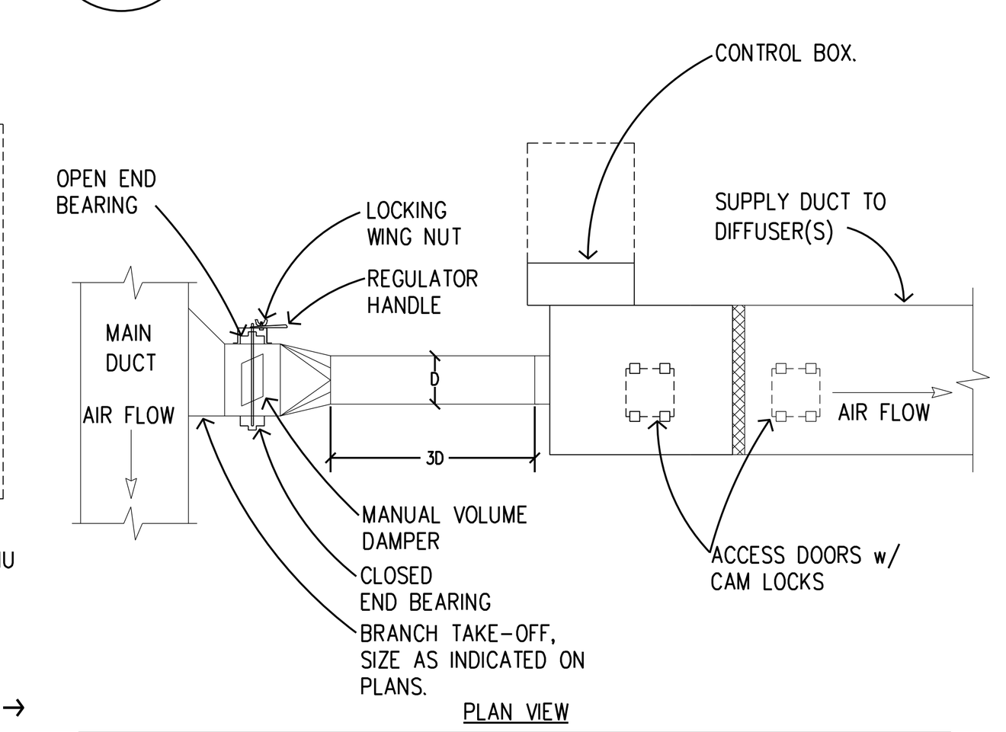
NO SCALE



NOTES:
1. DISPERSION TUBES SHALL BE MANIFOLDED AS REQUIRED.

15 / M5.1 STEAM HUMIDIFIER (HORI. TYPE) DETAIL MULTIPLE DISPERSION

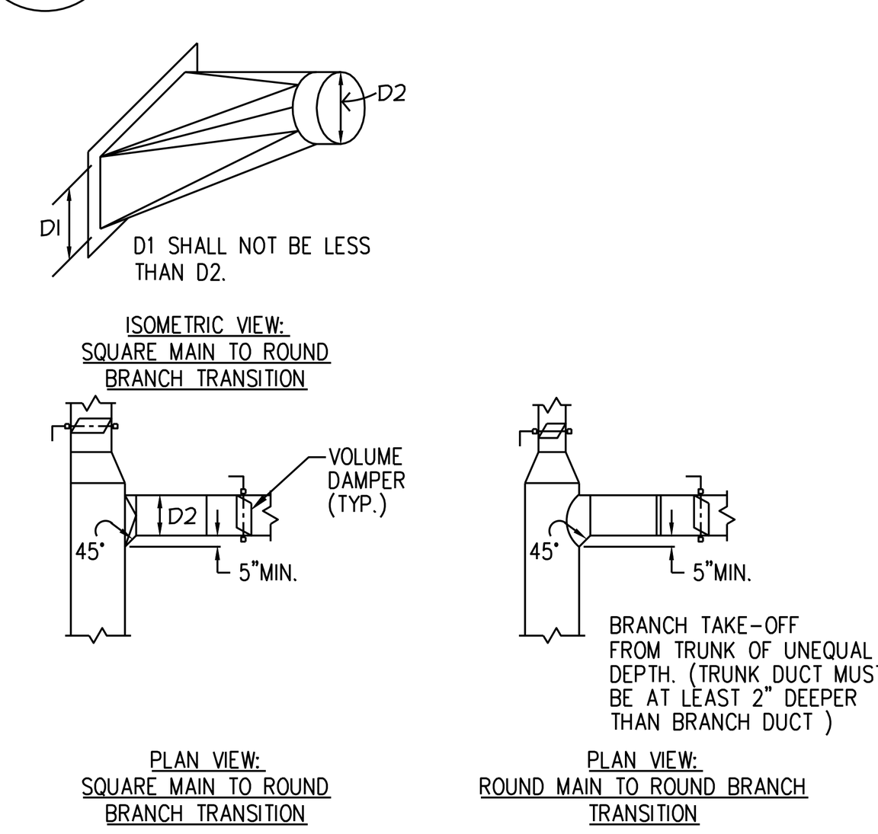
SCALE: NTS



NOTES:
1. COORDINATE LOCATION OF VAV BOX TO ALLOW FOR A MINIMUM OF 3'-0" IN FRONT OF CONTROL BOX.
2. DO NOT INSTALL VAV BOXES OVER LIGHTS
3. PROVIDE VOLUME DAMPER. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST INSULATION. ANY SHORT ARM VOLUME DAMPERS THAT ARE INSTALLED WILL BE REMOVED & REPLACED WITH LONG ARM DAMPERS

11 / M5.1 TYPICAL VARIABLE AIR VOLUME BOX DETAIL

SCALE: NTS



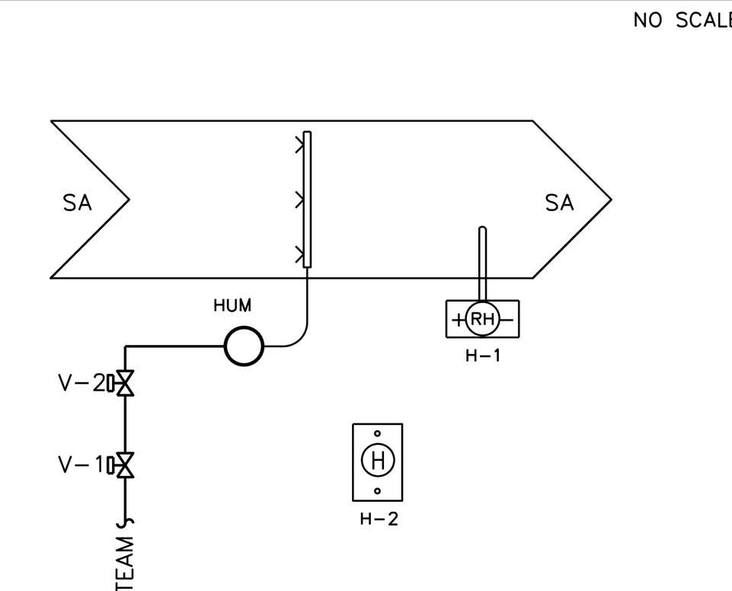
NOTES:
1. SIZE ALL TAKEOFF'S AS PER SMACNA.

7 / M5.1 ROUND DUCT CONNECTIONS DETAILS

SCALE: NTS

SEQUENCE OF OPERATION

Humidity Control: When the humidistat (H-2) is not calling for humidification, the humidifier valves shall be closed. If the supply fan serving the unit is proven running and there is a call for humidification, the humidifier on/off valve shall open (V-1). The humidifier modulating valve (V-2) shall modulate to maintain the space humidity (H-2) at the setpoint. The humidifier modulating valve shall not be allowed to open until the condensate temperature switch reaches the steam temperature (200 degrees). The discharge air humidity level (H-1) shall not be allowed to exceed 75 percent RH. The room humidity levels shall be monitored and a "Low Humidity Levels" alarm shall appear at the Operator's workstation if the levels in the room drop below 20%. A "high humidity levels" alarm shall appear at the operator's work station if the levels in the room rise above 55%.



POINT SCHEDULE

CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	BIN	TOTALIZE
H-1	DischRH	DISCHARGE RELATIVE HUMIDITY	X				X			
H-2	SpaceRH	SPACE RELATIVE HUMIDITY	X				X	X		
H-2	SpaceRHSetPt	SPACE RELATIVE HUMIDITY SETPOINT	X							
V-1	OnOffValve	ON/OFF HUMIDIFIER VALVE				X				
V-2	ModulValve	MODULATING HUMIDIFIER VALVE			X					

1 / M5.1 TERMINAL HUMIDIFIER CONTROL DIAGRAM

NO SCALE

MECHANICAL ABBREVIATIONS

@	AT	HW	HOT WATER
ACCU	AIR COOLED CONDENSING UNIT	I.J.S	IN JOIST SPACE
AFF	ABOVE FINISHED FLOOR	I.W.S.	IN WEB SPACE
AFMD	AIRFLOW MEASURING DEVICE	KW	KILOWATT
AHU	AIR HANDLING UNIT	LAT	LEAVING AIR TEMPERATURE
ARCH	ARCHITECT, ARCHITECTURAL	LAV	LAVATORY
ATC	AUTOMATIC TEMPERATURE CONTROLS	LB/HR	POUNDS PER HOUR
BDD	BACKDRAFT DAMPER	LWT	LEAVING WATER TEMPERATURE
BLDG	BUILDING	MA	MAKEUP AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	MAU	MAKEUP AIR HANDLING UNIT
BVI	BALL VALVE INDICATOR	MBH	ONE THOUSAND BTU PER HOUR
CA	COMBUSTION AIR	MCA	MINIMUM CIRCUIT AMPACITY
CC	COOLING COIL	MECH	MECHANICAL
CFM	CUBIC FEET PER MINUTE	MFS	MAXIMUM FUSE SIZE
CIRC	CIRCULATING	MISC	MISCELLANEOUS
CO	FLOOR CLEANOUT	MOD	MOTOR OPERATED DAMPER
CONC	CONCRETE	N/A	NOT APPLICABLE
COND	CONDENSATE	NC	NORMALLY CLOSED
CONN	CONNECTION	NIC	NOT IN CONTRACT
CUH	CABINET UNIT HEATER	NO	NORMALLY OPEN
CW	COLD WATER	NTS	NOT TO SCALE
dB	DECIBELS	OA	OUTSIDE AIR
DB	DRY BULB TEMPERATURE	ORD	OVERFLOW ROOF DRAIN
DEMO	DEMOLISH, DEMOLITION	ORL	OVERFLOW RAIN LEADER
DIA	DIAMETER	PH	PHASE
DIV	DIVISION	PRV	PRESSURE REDUCING VALVE
DN	DOWN	PSI	POUNDS PER SQUARE INCH
DWG	DRAWING	PV	POWER VENTILATOR
(E)	EXISTING	RA	RETURN AIR
EA	EXHAUST AIR	RD	ROOF DRAIN
EAT	ENTERING AIR TEMPERATURE	RH	ROOF HOOD
EER	ENERGY EFFICIENCY RATIO	RHW	RECIRCULATING HOT WATER
EF	EXHAUST FAN	RL	RAIN LEADER
ELEC	ELECTRIC, ELECTRICAL	RPM	REVOLUTIONS PER MINUTE
ESP	EXTERNAL STATIC PRESSURE	RTU	ROOFTOP AIR HANDLING UNIT
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
EXH	EXHAUST	SD	STORM DRAIN
EXIST	EXISTING	SEER	SEASONAL ENERGY EFFICIENCY RATIO
°F	DEGREES FAHRENHEIT	SPEC	SPECIFICATION
F/SD	COMBINATION FIRE/ SMOKE DAMPER	TA	TRANSFER AIR
FD	FIRE DAMPER	TR	TEMPERATURE RISE
FD	FLOOR DRAIN	TSP	TOTAL STATIC PRESSURE
FLEX	FLEXIBLE	TYP	TYPICAL
FLA	FULL LOAD AMPERAGE	UH	UNIT HEATER
FMD	FLOW MEASURING DEVICE (LIQUID)	V	SANITARY VENT
FPM	FEET PER MINUTE	VD	VOLUME DAMPER (MANUAL OPPOSED BLADE)
FTR	FINNED TUBE RADIATION	(VER)	VERIFY SIZE AND LOCATION
GALV	GALVANIZED	VAV	VARIABLE AIR VOLUME
GCO	GRADE CLEANOUT	VTR	VENT THROUGH ROOF
GPH	GALLONS PER HOUR	W	SANITARY WASTE
GPM	GALLONS PER MINUTE	W/	WITH
HB	HOSE BIBB	WB	WET BULB TEMPERATURE
HC	HEATING COIL	WCO	WALL CLEANOUT
HP	HORSE POWER	WH	WATER HEATER
HR	HOUR	W/O	WITHOUT
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING		

MECHANICAL SYMBOLS

DOMESTIC COLD WATER
DOMESTIC HOT WATER
DOMESTIC RECIRCULATING HOT WATER
SANITARY VENT
SANITARY SEWER ABOVE GRADE
SANITARY SEWER BELOW GRADE
RL — RAIN LEADER
ORL — OVERFLOW RAIN LEADER
SD — STORM DRAIN BELOW GRADE
HWR — HEATING WATER RETURN
HWS — HEATING WATER SUPPLY
GHWR — GLYCOL HEATING RETURN
GHWS — GLYCOL HEATING SUPPLY
CHWR — CHILLED WATER RETURN
CHWS — CHILLED WATER SUPPLY
HPWR — HEAT PUMP WATER RETURN
HPWS — HEAT PUMP WATER SUPPLY
HPS — HIGH PRESSURE STEAM
MPS — MEDIUM PRESSURE STEAM
LPS — LOW PRESSURE STEAM
D — CONDENSATE DRAIN
PC — PUMPED CONDENSATE
RL — REFRIGERANT LIQUID
RS — REFRIGERANT SUCTION
RD — REFRIGERANT DISCHARGE
HGB — HOT GAS BYPASS
FOR — FUEL OIL RETURN
FOS — FUEL OIL SUPPLY
FOV — FUEL OIL VENT
G — NATURAL GAS
FG — FIRM NATURAL GAS
IG — INTERRUPTIBLE NATURAL GAS
P — PROPANE
OX — OXYGEN
VAC — VACUUM
N — NITROGEN
N2O — NITROUS OXIDE
MA — MEDICAL AIR
CO2 — CARBON DIOXIDE
A — COMPRESSED AIR
PIPE DOWN
PIPE UP
BRANCH DOWN
BRANCH UP
BRANCH DOWN
BRANCH UP
PIPE BREAK
PIPE CAP
FLOW ARROW
PIPE GUIDE
PIPE ANCHOR
CONCENTRIC REDUCER
UNION
FLEXIBLE PIPE CONNECTION
PIPE FLANGE
BALL VALVE
BALANCING VALVES
BUTTERFLY VALVE
GATE VALVE
GATE ANGLE VALVE
GLOBE VALVE
GLOBE ANGLE VALVE
CHECK VALVE
SAFETY RELIEF VALVE
SOLENOID VALVE
PRESSURE REGULATOR VALVE
PRESSURE REDUCING VALVE
2-WAY CONTROL VALVE
3-WAY CONTROL VALVE
BALL VALVE INDICATOR
FLOW MEASURING DEVICE (LIQUID)
FLOW METER
AUTOFLOW VALVE ASSEMBLY
BALL VALVE/ STRAINER ASSEMBLY
STRAINER
AUTOMATIC AIR VENT
MANUAL AIR VENT
FLOW SWITCH
RPZ BACKFLOW PREVENTOR ASSEMBLY
PRESSURE GAUGE
SENSOR WELL
THERMOMETER
AQUASTAT
STEAM TRAP
INLINE PUMP
MEDICAL AIR MEDICAL GAS OUTLET
OXYGEN MEDICAL GAS OUTLET
VACUUM MEDICAL GAS OUTLET
NITROGEN MEDICAL GAS OUTLET
NITRIOUS OXIDE MEDICAL GAS OUTET
WAGD MEDICAL GAS OUTLET
NATURAL GAS MEDICAL GAS OUTLET

UP / DN — DUCT SECTION, POSITIVE PRESSURE
UP / DN — DUCT SECTION, NEGATIVE PRESSURE
POS / NEG — DUCT UP THROUGH FLOOR ABOVE OR ROOF
20x12 — RECTANGULAR DUCT, FIRST DIMENSION IS SIDE SHOWN
20? — ROUND DUCT
20x12 — ACOUSTICAL LINING
SQUARE ELBOW WITH TURNING VANES
VOLUME DAMPER
FD — FIRE DAMPER
SD — SMOKE DAMPER
F/SD — COMBINATION FIRE/SMOKE DAMPER
M — MOTORIZED DAMPER
RISE — RISE IN DUCT ELEVATION
DROP — DROP IN DUCT ELEVATION
FLEXIBLE DUCT CONNECTION
SIDEWALL SUPPLY REGISTER
SIDEWALL EXHAUST OR RETURN GRILLE
12x8 / 8? — ROUND NECK CEILING DIFFUSER, FLEXIBLE DUCT FROM MAIN WITH SIZE INDICATED
12x8 / 8? — SQUARE NECK CEILING DIFFUSER, FLEXIBLE DUCT FROM MAIN WITH SIZE INDICATED
12x8 / 8x8 — CEILING MOUNTED GRILLE OR REGISTER. RIGID DUCT FROM MAIN WITH SIZE INDICATED
ECG-CRATE GRILLE
SUPPLY AIR OUTLET
RETURN OR EXHAUST AIR INLET
T — THERMOSTAT
S — TEMPERATURE SENSOR
H — HUMIDISTAT
S-1 / 100 — NEW DIFFUSER, GRILLE, OR REGISTER WITH TYPE AND AIRFLOW INDICATED, (TYPE S-1, 100 CFM). REFER TO SCHEDULE FOR MORE INFORMATION
V-1 / 100, V-1 / 1.5 — VARIABLE AIR VOLUME BOX REFERENCE SYMBOL WITH AIR FLOW SHOWN (100 CFM) OR GPM SHOWN (1.5) REFER TO SCHEDULE
1 — SHEET NOTE REFERENCE
1 — DEMOLITION NOTE REFERENCE
1 / M-1 — DETAIL NOTE REFERENCE WITH DRAWING NUMBER SHOWN (1) AND SHEET NUMBER SHOWN (M-1)
1 / M-1 — ELEVATION/ SECTION NOTE REFERENCE WITH DRAWING NUMBER SHOWN (1) AND SHEET NUMBER SHOWN (M-1)
XXX — ROOM NUMBER
AD #1 — REVISION NOTE REFERENCE
CONNECT NEW TO EXISTING, VERIFY SIZE AND LOCATION OF EXISTING
HASH MARKS INDICATE ITEMS TO BE REMOVED.

* ALL SYMBOLS AND ABBREVIATIONS DO NOT NECESSARILY APPEAR ON DRAWINGS

Revisions | Date

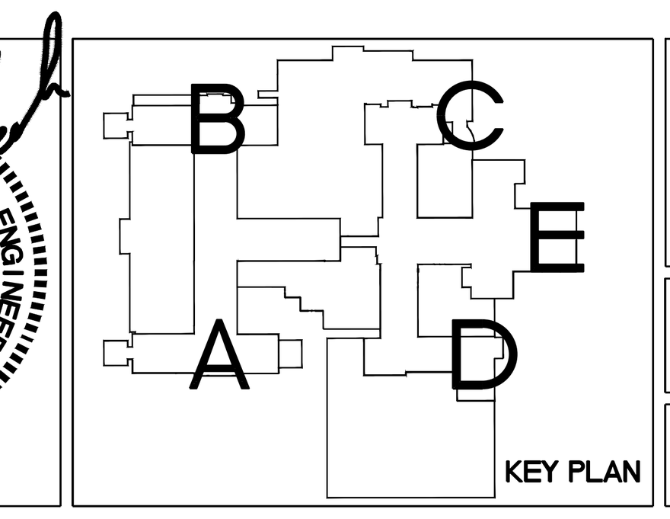
Dept. of Veterans Affairs
Health Care System
2101 Elm Street North
Fargo, ND 58102

IMAGE GROUP INC.
403 CENTER AVENUE, SUITE 300
MOORHEAD, MN 56560

IMAGE GROUP INC., Architecture & Interiors
OBERMILLER NELSON ENGINEERING, Mechanical Engineers
MBN ENGINEERING, Electrical Engineers

ONE BUILDING SYSTEMS CONSULTANTS
Fargo ▪ Grand Forks ▪ Bismarck
Alexandria ▪ 877.380.0501

REGISTERED PROFESSIONAL ENGINEER
JOEL C. PECK
PE - 6847
DATE 07/09/2013
NORTH DAKOTA



Drawing Title	MECHANICAL DETAILS, SYMBOLS AND ABBREVIATIONS
Project Title	IMPROVE SPS/LOGISTICS STORAGE ROOM HVAC SYSTEMS
Date	July 5, 2013
Scale	1/8" = 1'-0"
VA Project No.	437-13-103
Contract No.	VA263-P-1217 / VA263-C-
Designed By	JP
Checked By	JP
Drawn By	NH
Drawing No.	M5.1
Building No.	1, 9, 46
AutoCAD File Name	2012225_M5.1.dwg
Location	FARGO VA HEALTH CARE SYSTEM FARGO, ND
	Dwg. 14 of 21

Department of Veterans Affairs